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The Effects of Moonlight.

Professor Piazza Smyth, the Astronomer Royal for Scotland, in his interesting account of a recent scientific expedition made by him to the Peak of Teneriffe, has set at rest the vexed question of the heat of the moonlight. He says that his thermometrical instruments were sensibly affected by the moon's rays, even at the lowest of two stations occupied by him at different elevations. In tropical climates meat which is exposed to the moonlight rapidly becomes putrid; and in the Indies, the negroes who will lie sweltering and uncovered beneath the full glare of a tropical sun, carefully muffle their heads and faces when exposed to the moonbeams, which they believe will cause swelling and distortion of the features, and sometimes even blindness.

Improved Dumping Wagon.

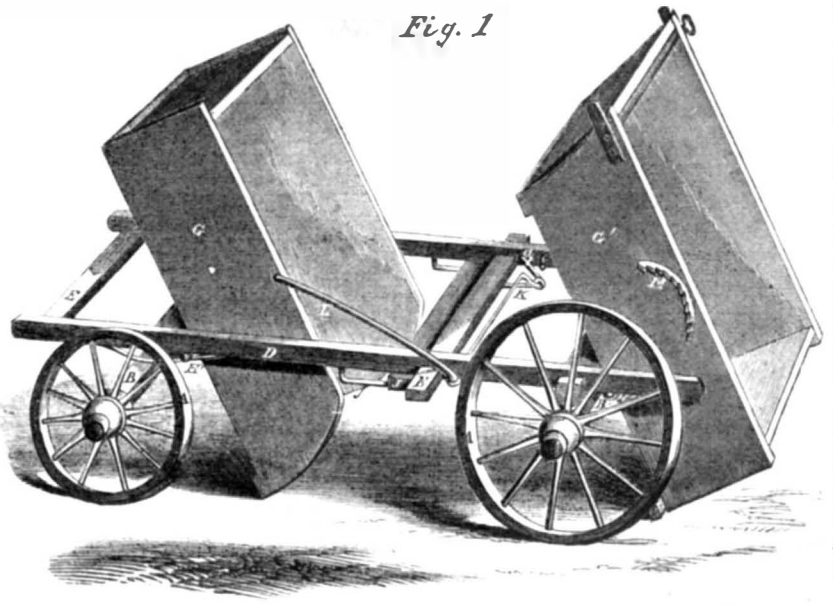
The advantages that are gained by constructing common road wagons, so that they will "dump" are so well known that it is unnecessary to recapitulate them. The wagon which is the subject of our illustration dumps in two parts, the body being divided transversely at or near the center of its length, and the sections are hinged so that they can be tilted independently of each other. This arrangement avoids the necessity of shifting or sliding the body, even if made long, independently of the frame, when it is desired to dump the load, as the front section can be dumped, and the truck then moved forward far enough to bring the rear section in proper position for dumping like the first, so that its load may be dumped on that deposited by the first section. Two different materials can be carried in this wagon and dumped separately, in different places, or in the same as desired.

In our engravings, Fig. 1 is a perspective view of the wagon, dumped. Fig. 2 is a side elevation of the wagon as ready for carrying a load, and Fig. 3 is a view of the mechanism by which the parts are dumped. A A are the wheels, and B B the axles of a common road wagon. D D are two side bars resting on the bolster of the front axle, and fastened permanently to the axle of the rear wheels. These bars are also connected together by stay-bars, E E. On the frame formed by the bars the body of the wagon is mounted; the section, G, being hinged at H, and the section, G′, being hinged at H′. The line, I, of division between the sections, is cut obliquely down through the body, so that the front section may descend without touching the rear one, and still a tight joint be maintained when the sections are locked together. The two sections are held up at the point, I, by the sliding bar, J, and by hinged catches, *a*. The bar comes underneath the division line, being arranged to slide back and forward in brackets, *j j*, and when under the line stops the front section from falling or tilting. The catches are hinged to the top of the side bars, D, and enter holes in the side-board of the rear section, and prevent it from tilting. K represents a crank bar operated by the lever, L, that moves J in its brackets. The lever, L, is held by a notched segment, M, in proper position to prevent the sections from dumping.

From the foregoing description and reference to the drawings, it is evident that if the wagon is loaded while in the position in Fig. 2, neither part will tilt, and the load may consequently be carried to the desired place. It is also evident that after the load is transported to the place of destination, and the sliding locking bar, J, moved to the position shown in Fig. 1, the front section may be as easily dumped as a short cart, and the other section can be dumped by withdrawing the catches, *a*. It was patented Oct. 20, 1857, by the inventors, M. Y. and T. J. Cope, of Centerbridge, Pa., who will be happy to furnish any further particulars.

COPE'S DOUBLE DUMPING WAGON.

Fig. 1



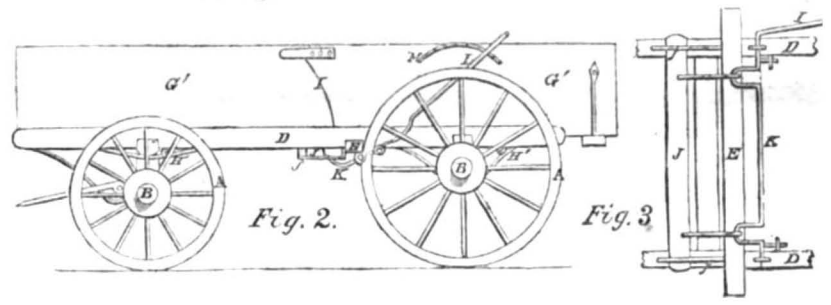


Fig. 2. *Fig. 3*

WOOD'S IMPROVED BREWER'S COOLER.

Fig. 1

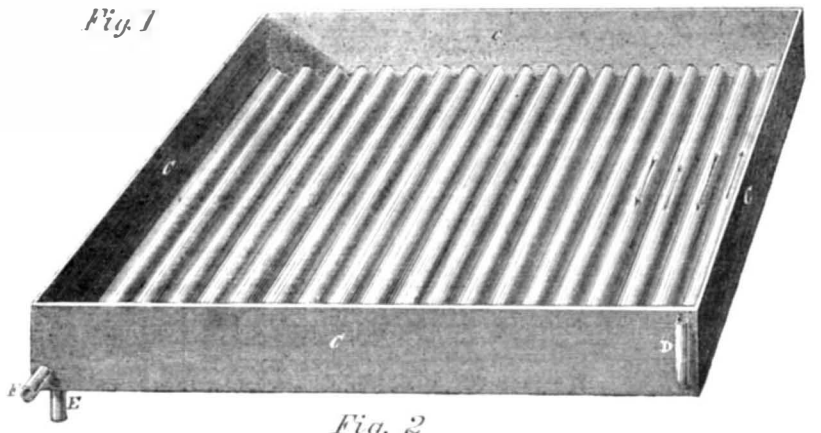
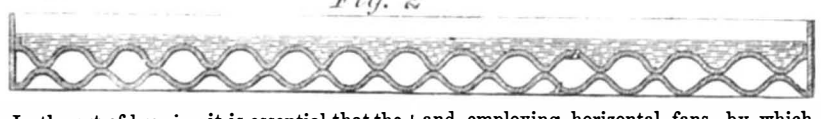


Fig. 2



In the art of brewing it is essential that the wort, after being boiled with the necessary quantity of hops, and properly concentrated and rendered clear, should be cooled as rapidly as possible, to prevent acetification, or "fixing," as it is technically termed. The means employed at present to effect this object consists in having large shallow vessels constructed of wood, into which the liquor is poured, and employing horizontal fans, by which a powerful draft of air is created over the surface of the liquor. Success by this means is not always certain, and the liquor is often acetified before it is cooled.

This invention renders the speedy cooling of the liquor a matter of certainty, and the construction of this improved cooler is extremely simple.

In our engravings, Fig. 1 is a perspective view of the cooler, and Fig. 2 a section.

Two plates of corrugated metal are laid on each other in the manner seen, B A, so that the corrugations form tubes, and they are closed slightly at the ends, and the depressions raised alternately, so as to open communication throughout the whole series. To this bottom are then placed sides, C, and a cooler is formed; the wort is poured in, and cold water passing through the tube, D, into the tubes formed by the corrugations, passes through them in the direction of the arrows, and out at E. A continuously flowing stream of cold water is thus kept up, and the liquor is rapidly and surely cooled, when it can be removed by the pipe, F.

The inventor is Adam Wood, of Pittsburg, Pa., and he will be happy to furnish any further information concerning it. It was patented September 15, 1857.

Air and Moisture.

Dr. Stark, Secretary to the Meteorological Art Society of Scotland, states that in Great Britain a certain amount of moisture in the air relative to its temperature is essential to health, and a deficiency in this amount is followed by an increasing mortality. By this is not meant the absolute amount of aqueous vapor in a cubic foot of air, but its relative amount. Thus, at a temperature of 30° Fah. a cubic foot of air requires about two grains in weight of watery vapor to saturate it completely. But if the heat of that air be raised to 60°, it requires rather more than 6½ grains in weight of aqueous vapor to produce the same amount of saturation. Yet both these airs are in the same relative state as to saturation with moisture, both have just that amount which they can easily carry. Meteorologists have agreed to reckon full saturation of the air with moisture, whatever be the temperature, as 100; and in Scotland the degree of humidity which appears to be most conducive to health ranges from 80° to 85° Thus, air at the temperature of 30°, with one grain and six-tenths of aqueous vapor, would be in the same state, as to moisture, as air at 60° with 4½ grains in weight of watery vapor —both would indicate 50° of humidity, and be in the best condition, in so far as amount of moisture is concerned, for the support of health.

Cisterns that will keep out Surface Water.

A correspondent—C. A. White, of Burlington, Iowa,—informs us that the following method of building cisterns in moist ground will effectually prevent water soaking through them from the outside and inside also:—

"The bottom of the cistern is spread with hydraulic cement in the usual manner, then laid over with brick, upon which the wall is commenced about an inch, or an inch and a half from the earth all around. When the wall is about four courses high, the interstices between the wall and the earth are filled with grout, or the ordinary cement, made very thin, and poured in; then build up the wall, and fill in with grout as before. When the cistern is plastered inside, the wall is completely encased with a coat of cement, that prevents the passage of water both ways."

Two schooners have already cleared from Detroit, Mich., this season, direct for Liverpool, and seven more are to sail on like voyages during the present month. Their cargoes are principally staves and other small hardwood timber.

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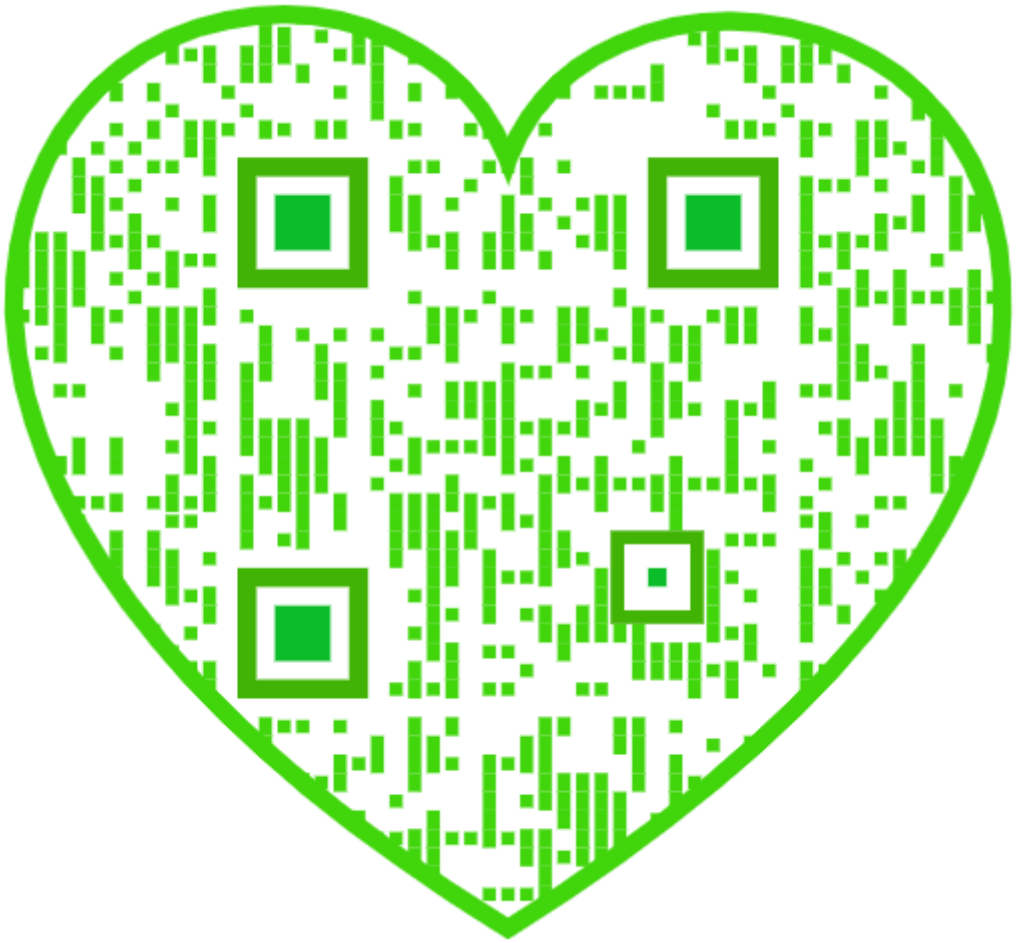

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 11, 1858.

[*Reported officially for the Scientific American.*]

WRENCH—James McKenzie, of Green Island, N. Y.: I claim fixing the movable jaw of an adjustable wrench by a toothed wedge, passing through the said jaw, fitting into the teeth or notches on the shank, in the manner specified, so as to keep the movable jaw firm to resist all pressure that may be applied to it.

REAPING AND MOWING MACHINES—L. J., Wm. S., and Cyrus H. McCormick, of Chicago, Ill.: We claim making the finger bar of a mowing machine of a bar of iron, wedge-formed in its cross-section, with its forward edge which carries the fingers made thin, that the sickle may act upon, and cut leaning grass, and with its rear edge thick to obtain the required strength, and the under surface inclined that it may act like a runner, to pass and ride over the surface of the ground to keep the cutting edge of the sickle clear of obstructions, whilst at the same time it can have access to leaning grass, all substantially as described.

COMPOUND PHOTOGRAPHS—Thos. Miltenberger, of Bellefontaine, Ohio: I claim the production of a compound photograph, or the taking of separate distinct photographic impressions on each side of a glass plate, or transparent tablet, and producing thereby a compound relievo or double stereoscopic effect on a single or simple plane or flat surface, in combination with a totally black background, through which solely is produced a transparent collodion film, in the manner substantially as set forth and described.

CARTRIDGE CASE—Geo. W. Morse, of Baton Rouge, La.: I claim my improved cartridge case as constructed with a tige, C, an annular shoulder, a, and an expansible cartridge closer, B, arranged within the body, A, of the cartridge, and made to slide longitudinally therein, and to operate in other respects substantially as above specified.

BINDING DEVICE FOR HARVESTERS—George Notman, of Deerfield, Ohio: I claim the grain box or receptacle, F, revolving fork, a', sliding fork, m', rod, g', slide bar, H, and sliding bottom, I, arranged to operate as herein described, and used in connection with any proper raking or conveying device, whereby the grain as it is cut is bound and discharged in sheaves from the machine.

[This invention consists in the employment of an intermittingly moving apron, grain receptacle, certain mechanism for twisting the bands around the grain in the receptacle, and a discharging device, the whole being attached to the machine, and arranged so that the grain as fast as it is cut by the machine may be gathered into gavels of requisite size, firmly bound, and discharged upon the ground.]

COTTON GINS—Enoch Osgood, of Boston, Mass.: I claim the combination of the oscillating clearer, D, and the concave guard or plate, C, constructed and arranged with the cylinder, B, and the rack, M, and made to operate therewith, substantially in the manner and for the purpose as before specified.

SELF-INKING HAND STAMPS—S. E. Pettee, of Mansfield, and Elias G. Cobb, of Foxborough, Mass.: We claim the hand stamp, the roller, Q, or its equivalent, on the lever, H, working against the curve, R, or its equivalent on the lever, N, to operate said lever, and carry the inking roller on, across, and off of the type, parallel or nearly parallel with the face of the type, so as to ink them uniformly and evenly to make a fair impression.

IMPLEMENT FOR SHOOTING MISSILES AT COWS, &C., ON RAILROADS—Stephen Scotton, of Richmond, Ind.: I do not claim the tube for shooting or squirting steam at stock in front of a locomotive, for that has been done before.

Neither do I claim separately any of the parts described in the second claim.

But I claim, first, the combination of a tube and gravel feeder with a locomotive, for the purpose described.

Second, The arrangement for closing and opening the slide, K, when combined with lever, J, and tube, A, substantially as described.

Third, The self-adjusting valve, F, in combination with the tube, A, as herein described.

Fourth, The elastic disk, E, combined with the tube, A, and plug, D, for purposes set forth.

INSTRUMENT FOR SHARPENING SLATE PENCILS—Gerard Sickels, of Brooklyn, N. Y.: I claim the instrument consisting as described, of a piece of steel, with an arched concave surface, on which teeth are cut, and with eyes at its ends to attach it to the slate frame, or other foundation.

[This invention consists in a plate of steel having its transverse section formed with a concave arch for the greater portion of its length, and having float or file-like teeth on its concave-arched face and eyes at its ends, which admit of tacks or screws to attach it to the frame of a slate. The pencil is held in proper position and scraped along it, and the teeth cut it to a point.]

CIDER MILLS—Michael Stevens, of Lucas, Ohio: I claim the arrangement of the several parts for the purpose "of retaining the liquor," and in the manner set forth.

HARVESTERS—Oren Stoddard, of Busti, N. Y.: I claim the supplementary sickle, D, connected with the sickle proper, C, and placed relatively with the sickle, C, so as to operate as and for the purpose set forth.

[This invention consists in the use of a supplementary sickle attached to the shoe at the outer end of the cutter bar, and arranged so as to be operated from any of the usual reciprocating sickles, and at the same time to cut vertically and at right angles with the sickle proper. The object of the invention is to cause the cut grass or grain to be perfectly divided from the standing grass or grain, so that a clean, close, and even swath is obtained, and a free path for the team.]

HARNESS TUG BUCKLE—Wm. Straw and Ramson H. Armstrong, of Hudson, Mich.: We claim the plate, B, provided with one or more tongues, i, attached to the frame, A, at one end, by means of a sliding joint and attached at the opposite end to the frame by means of a catch, h, and dove-tail connection formed by the groove, f, in the cross piece, g, of the frame, and the beveled front end, e, of plate, B, the whole being arranged as and for the purpose set forth.

[There is a plate attached by a sliding joint to a frame, the plate being provided with one or more tongues, and so arranged in connection with a catch that the tug can be readily adjusted so as to be of greater or less length as desired, and at the same time the connection rendered more secure than in the usual way.]

CORN HUSKERS—Daniel C. Smith, of Tecumseh, Mich.: I do not claim the forceps separately.

But I claim the combination of the forceps, A, with the wedge, J, roller, H, lever, g, post, L, with its slot, m, the knife, B, and plate, D, when these several parts are arranged as and for the purposes set forth.

I also claim, in combination with the forceps, A, the spring, E, fork, C, and thumb-screw, F, when arranged and operated as and for the purposes specified.

STRAW CUTTERS—Solomon P. Smith, of Crescent, N. Y.: I claim the arrangement of the arm, C, knife, E, and recoil spring, L, with straw box, A, when constructed for operation conjointly in the manner and for the purpose set forth.

HARVESTERS—Henry C. Smith, of Cleveland, Ohio: I claim the application of the intermediate wheel, X, at the end of the finger bar, when used in combination with the curved lever, Y, and flexible rod, W, arranged and operating substantially as specified.

I claim also the stops, a a, connected to the frame, and placed in such position to the line of draft, as will tend to counteract the dragging of the guards or finger bar upon the ground, when hinged to the axle of the driving wheel by the arms, M M', substantially in the manner and for the purpose described.

I claim, also, the steps, d d', in combination with the spurs, f f, attached to the arms, M M', for the purpose of raising the cutter bar in connection with the described system of leverage as set forth.

Also I claim the rebate or groove, c, formed in the heel of the cutter bar in the manner and for the purpose described.

BRUSH—Joel H. Tatum, of New York City: I claim the brush constructed as herein shown and described, so as to form a new and useful article of manufacture, to wit.: having the bristles, B, secured in detached positions in a metal plate, A, which forms the back of the brush.

[A notice of this invention will be found in another column.]

HARVESTERS—John S. Troxel, of Mount Pleasant, Pa.: I claim hanging and operating reels for harvesters on the main shaft, by means of yoke lever, C, and slotted lever, E, rod, G, and movable arms, L, slotted blades, d, pulley and strap, b, and slotted plate, B, with screw bolt, T, as set forth and described.

LASTS—Sidney S. Turner, of Westborough, Mass.: I claim a last made of wood, and provided with metallic edge guards, a a, and with grooves, b b, arranged along and against the inner sides of such edge guards and for the purpose of receiving strips of wood, c c, or other suitable material for the points of the pegs to enter while the last is in use, or a shoe thereon is being pegged, as described.

REPEATING ORDNANCE—George Utley, of Louisburgh, N. C.: I claim the shaft, S, with cams, D and f, as described, in combination with the reciprocating hammer, h, the laterally moving toothed wheel, m, and the detent, g', said parts being connected and operating with a many chambered breech piece having a rectilinear movement substantially as and for the purposes before set forth.

WASHING MACHINE—Miner Van Auken, of Chazy, N. Y.: I claim the adjustable stop board, F, arranged at the rear end of the rubber in combination with the scroll terminating slots, i j, in the pendulous arms of the rubber, E, substantially as and for the purposes set forth.

[This is an improvement on that class of washing machines in which an oscillating and curved corrugated rubber is employed in a box with a corrugated bottom. The improvement is in the hanging of the rubber and in the employment of a board, to facilitate and aid the more perfect cleansing of the fabrics to be washed.]

IRONING TABLE—Wm. Vandenburg, Jr., of New York City: I claim the ironing table composed of a board attached to one end of a stand, in such manner as to be capable of moving horizontally thereon to and from the other end of the stand, that it may be supported at both its ends during the ironing operation, but permitted to have a garment passed over one end before and after the ironing operation in the manner specified.

[This was refered to in conjunction with another ironing table by the same inventor, of which we published an engraving and description last week.]

BURNERS FOR VAPOR LAMPS—Thomas Varney, of San Francisco, Cal.: I claim the arrangement of the tubes, a b c f, and the passages between them, the burner tip, the wick, and the pipes, B C, substantially as set forth.

[See another page for a description of this improvement.]

WORKING SHIPS' LOWER SAILS OR COURSES—Samuel Very, Jr., of Salem, Mass.: I claim constructing what are commonly known as the "courses" of a vessel, viz., the foresail, mainsail, and cross-jack, with a central clew for a sheet or tack in addition to the usual sheet and tack of such sail, for the purpose of enabling a lighter crew to handle those sails, as set forth.

WATER WHEELS—Alonzo Warren and Elijah Damon, Jr., of Wareham, Mass.: We claim the supplementary or auxiliary buckets, l, attached to the underside of the lower rim, m, of the wheel, and arranged relatively with the edge of the rim and plate, k, as shown, for the purpose set forth.

We further claim in combination with the auxiliary buckets, l, the annular L-shaped plate, C and D, attached to the scroll, A, in connection with the ledge, c, on the upper surface of the disk, b, of the wheel, the whole being arranged to operate as and for the purpose set forth.

[The object of this invention is to render available as power, the leakage water, that is, the portion that usually escapes between the rims of the wheel and the scroll, and has hitherto been wholly lost, diminishing to a considerable degree the maximum power of the wheel.]

FLY NETS—Robert Wilson, of Milton, Pa.: I claim the peculiar construction of the fly-net having the stitch set parallel with the rib combined with the two right angles, formed by the lashes in passing through the rib, whether ribs are made flat, round, or any other shape, substantially in the manner and for the purpose set forth.

METALLIC ROLLING SHUTTERS—Wm. E. Worthen, of New York City: I claim, first, a revolving shutter, composed of slats of double thickness of sheet metal so formed at their edges substantially as specified, that each slat shall interlock with its neighbor by being bent at the edge into a configuration substantially such as is set forth herein.

And, second, I claim the combination of a series of such slats, having such interlocking edges substantially as described, with a chain on the sides thereof, said chain being constructed and combined with the slats substantially in the manner before made known.

SELF-REGULATING GRAIN MEASURER—George W. Atkins, of Milton Del.: First, I claim the arrangement of the platform, B, in combination with a box or case, A, so that the said platform shall have an up and down motion, by turning as a lever upon the hinge, H, or its equivalent, and being supported by means of the double cross lever, G, and spring, F, in such a manner as to yield downwardly under the weight of the measure of grain when it is placed thereon, and spring upwardly on moving the same, substantially in the manner and for the purpose set forth and described.

Second, I also claim, in combination with the said ratchet wheels, pawls, lever, indexes, and platform, arranged and operating together substantially as described, the two bells, v and y, or their equivalents, for the purpose of indicating audibly both the single and hundreds of measures of grain registered by the index, as described.

WATER WHEEL—Jesse Bartoo, of East Aurora, N. Y.: I claim the iron segment, H, in combination with the adjustable band, D, and semi-cylindrical cap, C, for the purposes substantially as set forth.

CHURN—William Brown, of Duncannon, Pa.: I claim the combination in a churn dasher of a series of slatted agitating and separating wings, c c c c, a series of gathering and retaining flanges, e e e e, and a solid concaved roll-forming hub, a, all substantially as and for the purposes set forth.

DRESSING AND SIZING WARPS—William Bradley, of Manchester, Va.: I am aware that drying cylinders have been used heretofore in dressing frames, therefore I make no claim to them.

Neither do I claim as new the circular brushes.

I am also well aware that reeds and harness have been used heretofore in dressing machines, consequently I make no claim to them as such.

But I claim the combination of the section sleys or reeds, together with the warp sleys or reeds, and the harness for taking the lease or cross shed before the warp is sized in every alternate thread or threads, so as to allow the lease rods to pass with the warp to the yarn beam, and thus dispense with the use of combs, ravels, or guides, after the warp has passed through the size, substantially as described.

HARVESTERS—C. B. Brown, of Alton, Ill.: I am aware that endless aprons have been applied to harvesters, and arranged in various ways, for the purpose of discharging the cut grain therefrom.

But I am not aware that an apron has been arranged as shown, and used in connection with guides, so as to discharge the cut hemp at a distance from the standing hemp, in order to form an unobstructed track for the team. I do not claim, therefore, an endless apron separately considered, or independent of the arrangement shown.

But I claim placing the endless apron, F, in an oblique position with the sickle, E, so as to operate as and for the purpose set forth.

I also claim the endless apron, F, in combination with the guide rods, I K, and sickle, E, when the several parts are placed relatively with each other, as shown, so as to operate as and for the purpose specified.

[A notice of this improvement will be found in another column.]

METHOD OF SEATING THE MOVABLE CUTTER IN EXPANSIVE BITS—William A. Clark, of Bethany, Conn.: I claim the combination of the V-shaped projection or seat, a, or its equivalent, with the corresponding groove in the movable cutter above the cutting edge, by which I am enabled to vary the distance of the edge of the cutter, B, near the stock, above that of the central cutter, to any desirable extent, substantially as and for the purposes set forth.

CORN PLANTERS—Robert J. Clay, of St. Louis, Mo.: I claim the arrangement of the hoppers, D D', valve, J, wheels, k, shaft, a, standard, e, and scraper, l, when the whole are constructed to operate conjointly as and for the purpose specified.

FASTENERS FOR SLEEVE BUTTONS—Henry Cogswell, of Providence, R. I.: I claim constructing sleeve buttons by attaching the bar, B, to the projections, a b, at the inner side of the plate, A, as shown, viz., one end of the bar being pivoted in one projection, a, and the other projection containing a catch, e, and spring, i, to retain the opposite end of the bar when closed, substantially as shown and described.

[This invention consists in pivoting a bar to a projection at one end of the under side of a plate, said bar being secured to a projection at the opposite end of the plate by a "snap;" the whole being so arranged that one button is made to answer the purpose of two linked plates that have hitherto been used.]

HARROWS—Jonas C. Conkey, of Washington, Ohio: I claim the combination of the hinge, i, axle, H I, and axletree, C, when arranged in connection with revolving harrows, as described, for the purpose set forth.

GRAIN-CLEANING MACHINES—John de Rush, of St. Mary's, Ohio: I claim the scouring plates, e f, fan, F, and suction spouts, A' L I M H, when combined and arranged relatively with each other, substantially as and for the purpose set forth.

[This invention consists in the use of a beater and screen peculiarly constructed, and arranged relatively with suction spouts and a fan, whereby a machine exceedingly simple and economical in its construction is obtained, and one that will separate smut, dirt, and all foreign substances from grain.]

HUB MACHINE—Lovett Eames, of Kalamazoo, Mich.: I claim operating or giving the feed movement to the carriage, B, in which the mortising tool is fitted or placed, by means of the horizontal rotating disk, K, provided with the ledges, e f, and having its shaft, G, stepped in the treadle, H, in connection with the rollers i h, on the shaft, l, which is rotated from the driving shaft, F, the parts being arranged as shown, or in an equivalent way, to operate as described.

[An engraving and description of this will be found on another page.]

RECLINING CHAIR—Augustus Eliaers, of Boston, Mass.: I claim, first, The general arrangement of the chair described, whereby the back, foot-rest, &c., are sustained and actuated as specified, and the foot-rest made adjustable, and locked in any desired position, as set forth.

I also claim the combination of the hinged rails, p p, sliding arms, s s, and mortises to receive the rails, p p, or in lieu of the rails entering the mortises in the said combination, the arm, g', attached to the back, and turning upon a pivot in the grooved or mortised sliding arm, whereby I am enabled to obtain a very long arm, as set forth.

PIPES FOR SMOKING TOBACCO—James W. Evans, of New York City: I claim the combination of the bulb or chamber, and the sponge or any other suitable material saturated with water, in the construction of smoking pipes or cigar-holders, constructed and arranged substantially as described.

WATER WHEELS—J. H. Fairchild, of Jericho, Vt.: I do not claim, separately, the draft tube, F, for that has been previously used.

But I claim the tube, F, in combination with the wheel formed of the screws, D D, placed on a shaft, B, and working within the tubular projections, a a, the whole being arranged to operate as described.

I also claim, in combination with the wheel and draft tube, the gates, E E, arranged as described.

[This is an improvement in that class of water wheels in which the water is made to act upon the wheel by means of atmospheric pressure or suction, produced by a vacuum formed in a draft below the wheel. The invention consists in the peculiar construction of the wheel and gates in connection with the draft, whereby the wheel is made exceedingly simple.]

TIME-KEEPERS—Henry C. Fay, of Troy, N. Y.; I disclaim the invention of a jointed verge, or one with movable detents, as that has been used by John Harrison and others (vide "Reid on Clock and Watch-making," page 205).

But I claim the invention of a verge with movable detents, so constructed that in the vibrations of the pendulum or balance each detent will be carried on, nearly on, or past its dead center, so as to greatly lessen the recoil of the movement.

PRESERVE CANS—Edwin W. Gilmore, of North Easton, Mass.: I claim the arrangement of the arm, and the cam, and the bar, B, whereby the cam is not only made to operate to aid in strengthening the bar when supported as described, but the arm is enabled to operate as a stop to maintain the cam in place while forcing down the cover, as set forth.

BEE HIVES—Edward P. French, of Nashua, N. H.: I am aware that it is not new to place a feeding chamber in front of the hive, or the end thereof; also, that it is not new to arrange a feeding chamber in one of the secondary chambers or honey boxes. I do not claim such, as in the one case the feed chamber is exposed to robber bees, while in the other it is arranged in an inconvenient manner, and is objectionable in many respects.

I claim making the lower part, or both sides, of the main chamber, B, inclined toward the orifice of entrance, e, in combination with the arrangement of an exercising and entrance chamber, D, chamber, F, feeding box, h, warm air spaces, G G G, and air or ventilating passage, O, leading from the exercising chamber D, upward against the front sides of the secondary chambers, and over their tops into the chamber, I, the main chamber communicating with said passage only by means of orifice e, at its bottom, whereby the main and secondary chambers are kept warm, and at the same time relieved of bad air or carbonic acid gas by a ventilating current of air induced by their heat, the several parts being arranged as respects each other, and constructed as described, for the purpose set forth.

PRINTING PRESSES—G. P. Gordon and F. O. Degener, of New York City: We do not claim the peculiar manner of hanging or arranging the reciprocating bed, K, for that is already patented, as previously stated.

Nor do we claim, broadly, giving a continuous rotary motion to a cylinder, when used with a reciprocating bed, as this has been previously done, and is common to many cylinder presses in use.

But we claim communicating motion to the cylinder at the time of giving the impression, by and through the motion of the bed, while the revolution of the cylinder shall be perfected by or through ordinary gearing, or other means entirely independent of the motion of the bed, thus alternating from one of these means to the other, to give a full revolution to the cylinder.

[A notice of this invention will be found on another page.

PAINT COMPOUNDS—William G. Huyett, of Williamsburg, Pa.: I do not claim the use of calcined iron ore, lime, or coal, except when compounded so as to form a paint as described by me. To the best of my knowledge and belief no such paint compound has ever been known or used.

I claim as a new article of manufacture, a paint compound composed of ground calcined iron ore, lime, and carbon, in about the proportions specified.

[This is a cheap paint, and of great durability.]

SOFA BEDSTEAD—John Irwin, of Philadelphia, Pa.: I am aware that the branches of gate hinges have been bent, and that a three-fold hinge is not, in itself, new. But my hinge differs from all other known hinges, and in its application to sofa bedsteads, forms, I believe, both an important and a patentable improvement.

I claim the described hinge, in combination with the back and seat of sofa bedsteads, for the purposes substantially as set forth.

CULTIVATORS—L. W. Kelley, of Brunswick, Ohio: I claim the combination and arrangement of the teeth beams, B B, with their attaching and adjusting bars, E E and G G, and the scrapers, M M, with their attaching and adjusting bars, L and G' G', with each other, and with the central beam, A, substantially in the manner and for the purposes set forth.

CORN MILLS—Charles Leavitt, of Cleveland, Ohio: I claim the manner of securing the revolving grinder, P, to the spindle, F, by means of the collar, L, wings, L', cap and nut, Q Q', when arranged as described, also the recess, S, in the outer casing, B', in combination therewith the adjusting and securing the grinder, R, in place, by means of the outer casing, B and B', and the diaphragm, M, upon which the grinder is superimposed in the manner specified. Also dividing the surfaces of the two grinders into an unequal number of parts or sections, for the purpose of bringing the several sections of the grinders successively into opposition, in the manner described, and for the purposes specified; and also the diaphragm, M, when arranged in relation to the support of the spindle, F, and grinder, R, and the collecting and discharging of the meal at one point, as specified; these several devices I claim when rrranged as described, and applied to the purpose set forth.

CANS FOR PRESERVING FOOD—A. S. Lyman, of New York City: I claim, in cans for preserving food, the combination of the reservoir, or filter, of suitable material, with a can having an arrangement for discharging its contents in such a manner, that whenever any food is drawn off, air, or gas deprived of the primary cause of decomposition, shall supply its place, substantially as and for the purposes specified.

RAILROAD CAR BRAKES—Geo. W. Zeigler, of Tiffin, Ohio: I claim the application of pressure to the rubbers by a longitudinal rotary and under the truck, combined with cams, C C', arranged and operating substantially es described.

I also claim, in combination with the rods and cams of the several cars, as described, the universal joint coupling, H, constructed and operating substantially as specified, to connect the aforesaid rods throughout the train.

I further claim transmitting the power to rotate the rods through a spring indicating apparatus, substantially as and for the purpose specified.

SASH FASTENER—F. W. Brocksieper and J. B. Sargent (assignors to J. B. Sargent), of New Britain, Conn.: We claim the bolt, D, as an attachment to a sash fastener, operating substantially in the manner as described.

STEERING APPARATUS—S. B. Cram and Chas. Weed (assignors to S. B. Cram), of Boston, Mass.: We claim the screw, a, and nut, G, in combination with the ropes operating in the manner substantially as set forth.

Second, And in combination with the above, we claim the described tightening apparatus, or any equivalent thereof, arranged in the manner set forth for the purpose specified.

Third, And in combination with the described arrangement of ropes or chains as applied to "mechanical steevers," we claim the employment of springs operating as described for the purpose specified.

CANDY MACHINES—G. P. Farrington and Samuel Brown, Jr. (assignors to themselves and D. B. Tiffany), of Xenia, Ohio: We do not claim the endless apron, although we do not know of its ever being used in the manner described.

What we claim is the construction of the machine, the construction of the sugar kettle and spouts as described, the method described of cutting off all the drops with one stroke of the knife working vertically in connection with the adjustable pitman, or any other means substantially the same, producing the same effect.

FORKS FOR ELEVATING HAY—C. E. and J. N. Gladding (assignors to C. E. Gladding), of Troy, Pa.: We claim the arrangement and combination substantially as shown and described of the head, B, joint, C, strap, c, plate d, loop E, and cord or wire, F, whereby all projecting arms are dispensed with, so that the instrument when not required for hoisting purposes may be used as a common fork.

[See a description in another portion of this paper.]

UTILIZING WASTE VULCANIZED RUBBER—Hiram L. Hall, of Beverly, Mass., assignor to the Beverly Rubber Company: I do not claim the mixing of asphalt, coal tar, resin or shellac, or other similar substance with native rubber, nor with vulcanized rubber previously dissolved by means of essential oils or other solvents.

But I claim the restoring of waste vulcanized rubber by grinding it and mixing it with asphalt, coal tar, resin, pitch, shellac, or other similar substances, so that it can be used again in the manufacture of vulcanized rubber fabrics, and be as serviceable, or nearly so, as when the fabrics are made with the use of the native rubber.

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FINGER OR GUARD FOR HARVESTERS—Lewis Miller, (assignor to C. Aultman & Company), of Canton, Ohio: I claim forming the shoulder on a wrought iron guard, by welding on a piece instead of drawing down a large bar, as set forth and for the purpose described.

And I also claim the shaping, leveling and truing of the guard or finger, so as to make them of uniform shape and size by means of a block, as described and represented.

WASHING MACHINE—D. E. Rohr (assignor to himself and Thomas W. Davis), of Charlestown, Va.: I claim the construction of the fluted rotating device, a b c d, the sliding reciprocating scoop, h h, with fluted or grooved squeezes or washing board, I J J, with yoke, beam and pendant, devices, K K L L, m, arranged, combined and operating substantially as in the manner fully described.

GUIDES FOR SEWING MACHINES—Lemuel W. Serrell, of Brooklyn, N. Y., assignor to John Harold, of Hempstead, N. Y.: I claim, first, The detached tongue, g, around which the edge of the cloth to be hemmed is folded or wrapped to a greater or lesser extent, substantially as and for the purposes specified.

Second, I claim the adjustable hem spreader, K, in combination with the tongue, g, substantially as specified.

Third, I claim the combination of the separate or detached tongue, g, with the inclined tucker, h, to pass the edge of the cloth beneath the said tongue, g, between that and the material on the bed to form the hem, substantially as specified.

Fourth, I claim the finger, g, in combination with the tongue, g, substantially as and for the purposes specified.

Fifth, I claim the gage, r, in combination with the hem, spreader. k, and gage, l, substantially as and for the purposes specified.

RE-ISSUES.

ARITHMOMETER FOR ADDING—O. L. Castle, of Upper Alton, Ill. Patented Nov. 24, 1857: I claim, first, The combination of the repeater, X, the stationary repeater stop, 17, the sliding stop bars, T 1, T 2, &c., and the stationary stop pin, w, with the driving wheel, D, or its equivalent, provided with a series of holes, e e, the whole operating substantially as described to control the motion of the register.

Second, Combining the shaft of the driving wheel, D, or its equivalent, with the keys, S 1 S 2, &c., by means of a stronger spring, v, and a weaker spring, R, and a lever, 13, deriving motion frem the keys, the whole operating substantially as described for the purpose set forth.

Third, Combining the keys with the sliding stop bars, T 1 T 2, &c., by means of the wedges, 8 8, attached to the keys; the arms, v v, sliding on guide bars, V, and and the collars, 6 6, and springs, 7 7, applied to the guide bars, substantirlly as and for the purpose specified.

Fourth, The loose teeth, r, applied to the wheels, o o, and operating substantially as described for the purpose specified.

Fifth, Making the "register" movable longitudinally relatively to the driving wheel, D, or its equivalent, substantially as described, for the purpose of changing the driving operation to the register wheels of different denominations at pleasure.

[This invention was noticed on page 99 of the present volume, and has now been re-issued in an amended form.]

SAWING MILL—Wm. Hawkins and Wm. C. Clary, of Milwaukie, Wis. Patented March 30, 1858: We claim changing the saw after each cut, alternately, from an oblique position in one direction, to an oblique position in a contrary direction, to the line of the log carriage while cutting in either direction by the movements of the machine, and for the purposes set forth.

We aleo claim the swing guides, w' w', in combination with the stationary guides, w w, for the purpose of guiding the saw as described.

We also claim the two wedge rollers, or wedges, P' and P'', to keep the board clear of the saw. while cutting in either direction, as described.

We also claim the combination of pinions, i, and pins, o, entering into recesses of plates, b, the ratchet wheels, g, the ratchets, a, the adjustable segments, J, the wheels, G', the screws, G, and the rods, K, with their clutches, z and v, for the purpose of setting the log to the saw, and stopping the setting when the log frame advances too close to the saw.

And we also claim the notched plate, t, in combination with the latch, g, lever, w, and link, l, for the purpose of operating the belt shifter, l, without turning the lever, D, substantially as set forth.

SEED PLANTERS—B. Kuhns, of Dayton. Ohio, and M. J. Haines, of Delaware City, Del. Patented Sept. 30, 1856: We make no claim to the pocketed wheel of itself, nor do we claim the adjustable seed discharge apertures.

We also disclaim the grooved roller in Fig. 27, and described on page 104 of Low's Elements of Practical Agriculture.

But we claim the pocketed roller, as described, running close to the bottom of the cell, in combination with the adjustable aperture in said cell bottom, when the relation between the width of the pocket and maximum size of the aperture is such that the pocket will always embrace the apertures, and for the purposes described.

SEEDING MACHINES—C. W. Cahoon (assignor to J. B. Cahoon and D. H. Furbish), of Portland, Me. Patented Sept. 1, 1857: I do not claim the slide, b, nor the rock shaft, c, with teeth, d, attached, for stirring or agitating the seed within the hopper, separately; neither do I claim distributing or sewing seed broadcast by means of centrifugal force effected by the rotation of wheels or cylinders, irrespective of the construction and arrangement shown.

But I claim, first, The employment of a tubular chamber or discharger, rotating rapidly in a horizontal position, so that its outer edge or periphery will be in a plane vertical or nearly vertical to the horizon, and thereby communicating a centrifugal motion to the grain, seed, &c., away from the center of a circle whose plane is thus vertical or nearly vertical to the horizon.

Second, The employment of a funnel-shaped discharging chamber for the purpose, and rotating in the position above described, having spiral flanches or their equivalents inserted therein, and operating to arrest the too direct flow of the grain or seed, &c., through the discharger, and retaining it therein until the necessary centrifugalforce is communicated to it before it leaves the discharger, as above described.

Third, The combination and use of the above described and above elaimed tubular or funnel-shaped discharging chamber, rotating in the position above described with the disk, H, placed and operating in the manner above described.

Fourth, The combination and use of the above described and above claimed tubular or funnel-shaped discharging chamber, rotating in the position above described whether with or without the use of the disk, H, with a hopper constructed of any proper material, and fitted with the slide b, and rock shaft c, with teeth d, attached, or their equivalents, and operating substantially in the manner above described to feed the grain, seed, &c., into the discharging chamber.

MACHINERY FOR SEPARATING FLOUR FROM BRAN—Issachar Frost and James Monroe, of Albion, Mich., assignors to Henry A. Burr, I. D. Condit, Alex. Swift, D. Barnum, and John M. Carr, of New York City. Patented Feb. 27, 1849—Re-issued March 13, 1855—Again re-issued May 11, 1858: We do not claim as our invention the placing of the bolt in a vertical position as this was known before our said invention, but under a combination of parts resulting in a mode of operation essentially different from our said invention. Nor do we claim any of the separate parts, or sub-combinations other than as after specified.

What we do claim is, the combination of the following essential features or their equivalents, viz.:—

First, The vertical or nearly vertical position of the bolt.

Second, A surrounding case forming a chamber or chambers around the bolt, substantially as and for the purpose specified, and provided with suitable means for the delivery of the flour as specified.

Third, A rotating distributing head at or near the upper end of the bolt, substantially as described.

Fourth, Rotating beaters or fans within the bolt, substantially as and for the purpose specified.

We also claim, in combination with the first, second, and fourth features of the combination first claimed, the closed up top of the bolt, except an aperture or apertures for the admission of the material and air, substantially as and for the purpose specified.

We also claim, in combination with the first, second, and fourth features of the combination first claimed, the closed up bottom of the bolt proper, except an aperture or apertures for the discharge of the bran, substantially as and for the purpose specified; whether the said bottom be, or be not, specially provided with an aperture or apertures, for the admission of air as specified.

We also claim, in combination with the third combination claimed, or the equivalent of the features thereof, the employment of rotating arms, or swings moving in close proximity with the inner surface of the closed up bottom, substantially as and for the purpose specified.

We claim the combination of all the features specified as essential features, substantially as described, or any equivalents for any or all of the said features.

DESIGNS.

TOOL BOXES—Herrick Aiken, of Franklin, N. H.

COOKING STOVES—Thos. H. Wood and J. E. Boberts, of Utica, N. Y., and H. S, Hubbell, of Buffalo, N. Y.

COOKING STOVES—S. W. Gibbs (assignor to Rathbone & Co.), of Albany, N. Y.

PARLOR STOVES—S. W. Gibbs (assignor to Rathbone & Co.), of Albany. N. Y.

STOVE DOORS—Jacob Beesly (assignor to J. S. Clark and Washington Harris), of Philadelphia, Pa.

Petrifying Wells.

Let us away to the hills, to the green meadows decked with daisies, to the field path, to the banks of Derwent's stream. This is the village of Matlock, nestling in the bosom of mother earth, a charming spot in the plains of Derbyshire, famous all the world over for its petrifying wells.

These are the Hights of Abraham; that towering rock is High Tor, "frowning at night and smiling in the morning;" between them flows the river Derwent. From the sides of these rocks little streams issue, and (marvelous as it may seem) everything this water runs over turns to stone! This is no fiction, but a positive fact. For instance, if you take a favorite rose bush, and so place it as to allow the stream to drip down its thorny side, it will, in the course of twelve moons, become petrified—a rock of beauty, in fact, defying the sculptor's art. No matter what you put there, the effect is the same. Some of the wicked wags of Matlock went over to Ambergate one evening, and stole from John Wiggins his wig, which they placed in the petrifying well, and it was turned to stone. The favorite things to petrify are birds' nests and eggs, which are very beautiful. The three petrifying wells here are literally filled with all sorts of things undergoing the rockification process. Many of these things have been brought from a great distance, (even from Canada and Ceylon,) as tokens of affection and love. Toys, once the favorite playthings of a now departed child, are here petrified; and thus they become a real treasure, the only one mamma has left.

With very few exceptions, spring water contains lime, magnesia, and other stony stuff dissolved in it, which accumulates during its subterranean travels. You know that if water runs over a bed of sugar, a sweet well is the result. In Cheshire there are salt beds; these produce salt or brine wells, from the springs of water that come into contact with them. Thus we have also water containing lime, magnesia, strontia, and baryta. The petrifying springs that trickle out of the perpendicular sides of Mount Abraham and High Tor, at Matlock, are highly charged with lime; on exposure to the air, a large portion of the water evaporates, and the lime remains; whatever this reduced quantity of water trickles over, therefore, soon becomes coated with a thin film of lime, which increasing in substance partakes of the property of limestone. Woody fiber that will absorb the water will have lime deposited within its cells, and which, hardening to the consistence of stone, imparts at length that solidity which we call petrifaction.

The petrifying wells, however, are not the only natural curiosities that are to be seen at Matlock. You can, if so disposed, penetrate into the earth's crust. What is called the Speedwell lead mine is in truth a crystal cavern of resplendent beauty, full of stalactites and staglamites, spar, dogtooth crystals of carbonate of lime and doubly refracting spar. As you walk through the Strand, in London, the shop of Mr. Tennant, the mineralogist, will be likely to arrest your attention, for in the window may be seen a fine specimen of this double refracting spar from Derbyshire. If you draw a black ink line on a piece of paper, and look at it through this glassy spar, there will appear two lines. Everything, in fact, appears *double* that is seen through it. Now the production of all these beautiful crystals, these stalactites, these staglamites, these spars, has been the work of many hundreds of years. Chemistry assures us that they are all composed of the very same ingredients as are now found in the waters of the petrifying well.

SEPTIMUS PIESSE.

The American Horse.

It appears to be a matter of history that the horse, which is now so extensively distributed, both in a wild and domestic condition, throughout our continent, was not an inhabitant of it when America was discovered by Columbus. It is stated that the first European horsemen were taken to be strange beings—the horse and his rider as one person—by the aborigines of our country. Although this is probably true of the horse, yet recent scientific explorations go to prove that he was an old resident of the New World as well as the Old.

Professor F. Holmes, of Charleston, S. C., has discovered several fossil teeth of the horse in a post-pleiocene deposit on the Ashley river, and several teeth have also been exhumed by Col. McChesney, of Troy, N. Y., in his garden. The fossil American horse appears to have been cotemporary with the mastodon; and some of our naturalists have been speculating on his age, and the unity of the species. Agassiz, who is at the head of our naturalists, does not believe in the unity of the species of men or brutes, and the tendency of the belief of his school of naturalists is, that the horse and man were inhabitants of this continent many thousands of years before this world was created—according to the popular belief—about six thousand years ago. It is all vanity to speculate on these questions of *time* in regard to natural events, they never can be settled. It would be more wise and profitable for these philosophers to devote attention to the discovery of the cause or causes which led to the extinction of those horses which once inhabited America; because the same causes which operated then to destroy large numbers of animals—completely annihilated them—may operate again to produce like effects. In our opinion, there was at one period perfect land communication between the Old World and the New. The old tradition that there was once a great, rich and populous country, known to the ancients, and called "Atlantis," which was swallowed up by a storm in the Atlantic ocean, may be founded on fact.

Yield of Maple Sugar.

The Montpelier (Vt.) correspondent of the Boston *Traveler* writes that the maple sugar season is about over, the crop being a full average one, or a trifle less than three pounds to the tree. Last year was an extraordinary season, the yield being over five pounds to the tree, or nearly enough, if equally distributed, and all kept for home consumption, to have supplied every family in the State.

Ethnography.

This science, one of modern creation, describes the customs, religion, and, in fact, everything which is characteristic of a nation. The importance of pursuing it as a study cannot be too highly estimated in this traveling age, and it takes an equal place with geography and history, for without them it cannot be understood, and at the same time its facts throw much light on them.

Correction.

In our last number, in the description of W. Vandenburgh, Jr.'s ironing table, we stated that it was patented April 6, 1856; it should be 1858.

Atmospheric Railways.

In the article on this subject in the "New American Cyclopædia," just publishing, there is considerable information in relation to what has been done in this branch of the engineering art in Europe, but there is nothing said about what has been done in America. This is to be regretted, as considerable information might have been obtained to have redeemed the work from the charge of "an incompetent compilation," and which might have made its character more in accordance with its name, as an American work. If the pages of the SCIENTIFIC AMERICAN had been consulted, the editors would have found Ira Avery's atmospheric railroad illustrated on page 273, Vol. III, for which an American patent was granted in September, 1847; and on page 265, Vol. VIII, they would also have been enlightened with an illustrated description of Richardson's atmospheric tubular railway, which made considerable noise in Congress a few years since on account of appropriations being asked, for to construct a government line.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

HEMP HARVESTER.—C. B. Brown, of Alton, Ill., has invented an improved machine for harvesting hemp, the invention in which consists in the employment of an endless apron and guide rods arranged relatively with each other and the sickle or cutting device, whereby the hemp as it is cut, and one swath formed, is conveyed back from the sickle and deposited on the ground at a sufficient distance from the standing hemp, to allow an unobstructed walk or track for the team when the succeeding swath is being formed.

PRINTING PRESS.—This is an improvement on that class of printing presses, in which a continuous rotating cylinder that receives the sheet to be printed is used in connection with a reciprocating bed on which the form is placed. The object of the invention is to simplify in a great degree the construction of such presses, and also to obtain a positive or vibratory movement of the cylinder and bed relatively with each other at the time the impression is given to the sheet, thereby ensuring a perfect register and a clear impression. G. P. Gordon und F. O. Degener, of New York, are the inventors.

BURNER FOR VAPOR LAMPS.—Thos. Varney, of San Francisco, Cal., has invented an improved construction of burners for burning the vapor of Benzole, or of other hydro-carbon that can be burned in vapor lamps. They are made in such a manner that the admixture with the vapor of the necessary quantity of air supplied by a blowing apparatus to make it burn with a brilliant light shall be effected within the burner instead of within the reservoir, as is now usual.

BRUSHES.—J. H. Tatem, of New York, has invented an improvement in the manufacture of brushes, which consists in having the back of the brush in which the bristles are secured formed of a thin metal plate, the bristles being secured in this plate detached from each other and at equal distances apart. The object of this invention is to obtain a brush that can be readily cleaned, which will not absorb grease, and will not in any way be affected by moisture, and hence be exceedingly durable, and at the same time not more expensive than those at present in use.

HAY FORK.—This invention relates to an improvement in that class of hay forks in which a tackle is used for elevating the loaded fork. The invention consists in attaching to its handle by means of a joint and securing the rake when loaded in a proper relative position with the handle by means of a catch or fastening connected with a rope, which is also attached to the handle. The parts are arranged so that the fork may be readily elevated and loaded and unloaded, the manipulation throughout being extremely simple. Chas. E. and Joseph N. Gladding, of Troy, Pa., are the inventors.

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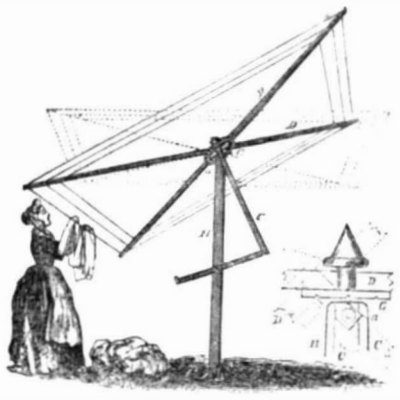
New Inventions.

Morrill's Clothes Dryer.

The accompanying engraving illustrates an improved out-door clothes dryer, for which a patent was granted to Samuel Morrill, of Andover, N. H., Nov. 11, 1856. This invention consists in so arranging the reel as to allow it to be tilted for the purpose of putting the clothes thereon, and then by means of a handle raising the reel to a horizontal position which elevates the clothes high enough to be out of reach, and in a good position to dry.



In the engraving, H represents the post which is either set in the ground or upon a platform capable of properly supporting it. Near the upper end of this post there is attached by means of a bolt, *a*, the arm, C, so as to admit a working joint. To this arm, C, is hinged the lever, E, which slides through an oblique staple on the post, H, and has notches cut therein to fit the staple, and hold the reel in any position. The reel arms, D D, to which the lines are secured, are made of wood and securely fastened to the cast iron head, G, which is cast with apertures to receive the arms, and also has a ratchet wheel cast on the underside. Through the head, G, there is cast or made a hole which fits a pin (having a shoulder to prevent it dropping too far) on the lever, C, upon which it rotates. Attached to the post, H, directly under the ratchet wheel is a finger which, when the reel is tilted, will catch into the ratchet, and prevent the weight of clothes from turning it backward after being moved along.

To tilt the reel it is only necessary to elevate the lever, E, by the handle to a nearly horizontal position, when it will slide through the staple which causes the reel to tilt to the desired position, where it is held by the notches. To elevate the reel to the position of the dotted lines it is only necessary to raise the lever, E, from the staple on the post, and draw it forwards until the lever, C, is in a line with the post, H, when by dropping the lever, E, it forms a permanent fastening.

For further information address C. A. Durgin, 335 Broadway, New York.

Improved Machine for Turning Hubs.

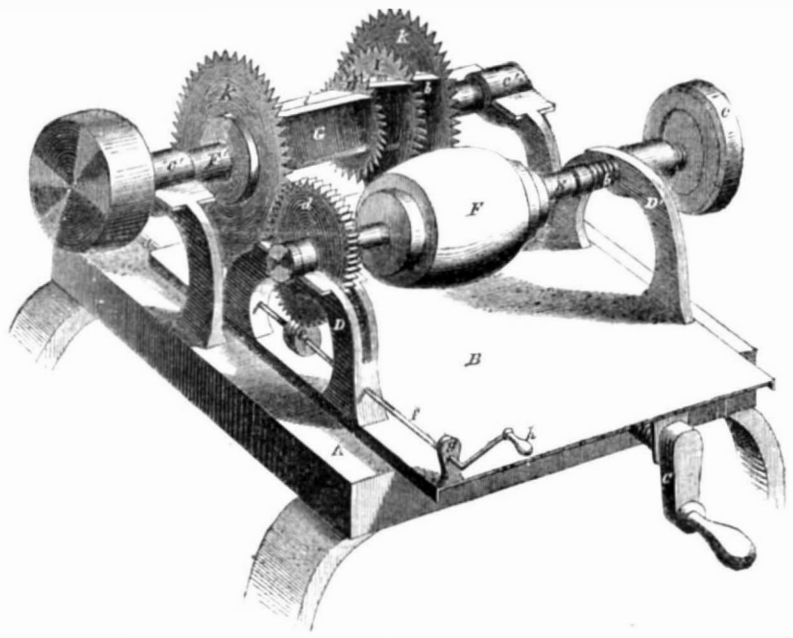
Of late, inventors have turned much of their attention to the production of new, and the improvement of old, carriage machinery, or combinations of mechanism, for the production of the several parts of carriages. The most important parts of a vehicle are, undoubtedly, the wheels; and on the soundness and accuracy of the hubs the safety of the carriage or cart depends.

Lovett Eames, of Kalamazoo, Mich., has invented a machine for turning the hubs of vehicles, which will admit of them being made any size, and perfectly in proportion, by simple and convenient mechanism. The machine is represented in our engraving, and its construction and operation we will now describe.

A is a bed, mounted on a suitable frame, and on it there slides a bed plate, B, upon the ways, *a*. The bed plate, B, is moved back and forth by the handle and screw, C. From B there rise two supports, D and D′, carrying journals, in one of which, D, there is a cog wheel, *d*, that is rotated by the worm, *e*, upon the shaft, *f*, passing through the standard, *g*, by the handle, *h*. The hub, or block F′, from which it is to be cut, is placed between the axle of *d* and E, that has upon it a screw, *b*, passing through a nut journal in D, operated by a hand wheel, *c*, that brings the hub into proper position, and holds it there.

From A there also rise two supports, having journals, *c*′, upon them; through these passes the axle, F′, carrying the saws, K H I *k*, for grooving and allowing the cutters to shape the hub in the proper manner. These cutters are placed on squares, G, between the saws, like

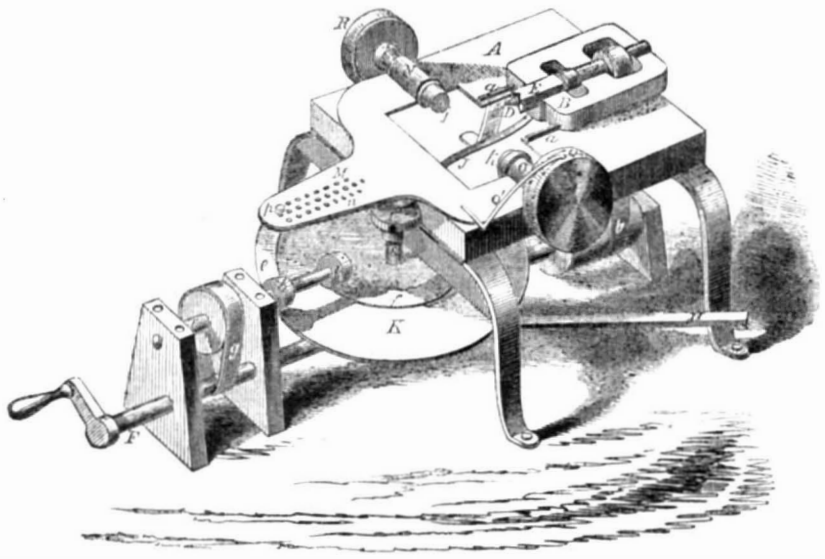
EAMES' MACHINE FOR TURNING HUBS.



the cutters of a planing machine, and are indicated by *i m b*.

The operation is very simple. A rapid motion being given to the cutters and saws from any prime mover, the hub or block is fed up to them by means of the handle, C, and the hub is rotated before them, so that it shall be cut perfectly round, by the handle, *h*, before described. A patent on this machine is applied for.

EAMES' HUB MORTISING MACHINE.



The improvements which constitute the invention in this mortiser are, the peculiar methods employed of giving the feed motion to the cutters, and other points, that will be seen as we proceed in our description. It is a supplemental machine to the above, and can either be used as such or by itself, the hubs being turned by any other machine. It was patented this week, and the claim will be found on another page.

A is a bed plate, mounted on any proper frame, and carrying a cutter frame, B, which slides upon the ways, *a*. In this frame, B, is a hollow cutting mandrel, E, in which there rotates a boring tool, D, turned by the belt, *b*, from the drum on the shaft of the crank, F. The hub is placed between the chucks, *j* and *k*, that rest on axles passing through journals, N and O. The hub is fixed tight and moved round by the wheels, R Q—Q being a stop wheel, having a spring stop, Q′, fitting into holes on its periphery, and thus regulating the distance apart that the mortises are to be, to accommodate the proper number of spokes. These chucks, wheels, and journals are placed on a movable plate, M, that moves to the right and left, and by a pin, *p*, passing through holes, *n*, in M, into corresponding holes in A, the hub is presented at a proper angle to the tool, to give the required "dish" to the wheel when the spokes are driven firmly in.

The feed motion is given to the tool in an ingenious way; to B there is secured a link, J, the other end of which is connected with a crank wheel, I, upon an upright axle, G, to the bottom of which there is also a large disk, K. On this disk there are two semicircular raised pieces, *e* and *f*, in the position shown, and on or over these move the rollers, *h i*, upon the shaft, L; this shaft is rotated by the band, *g*, from the main crank shaft, F. As it is necessary to give a slow feed motion when the hub is being cut, the roller, *h*, first passes over *e*, and by friction gives motion to K, which draws the cutter or tool into the wood; and the amount of friction and consequent power of the feed in hard or soft wood is regulated by the lever, H, into one end of which the axle, G, is stepped, so that by pressing with the foot upon the other, the plate, K, is raised, and the ways, *e* and *f*, brought into closer contact with the respective rollers. The tool having cut the required depth, the gigging back must be quick, so the way, *e*, ceases, and *i* passes on to *f*, and that being nearer the center of K than *e*, gigs back the tool very quickly while the hub is being turned to the next spot to be mortised. A belt pulley may be substituted for the crank, F, when the machine is operated by power.

The inventor will give any further information concerning either of the above inventions upon being addressed at Kalamazoo, Mich.

Hoop Skirts.

There is a hoop skirt manufactory in this city which weekly turns out 24,000 ladies' skirts, employing for that purpose 500 hands, 180 sewing machines, and not less than a tun of steel. Hoop skirt making is a science, and one on which patient study and exquisite skill have been bestowed in the several departments of the fabrication, till by successive improvements an article of dress has been produced which is thought to be favorable to health, while it conduces to comfort and beauty. Various materials have been employed to give the required degree of flexibility to the skirts, to enable their wearers to sit upon them, and pack them to the smallness of compass frequently required, without affecting their elasticity and capacity to again spread themselves to the full extent and graceful form when raised to an erect position. We believe, however, that the rotundity of spread is now given to this general favorite of female apparel by very thin steel springs, so prepared and intertwined with the stiffened fabric of which they are principally composed as to give them these characteristics.

Art in Cast Iron.—Washington.

The fitness of cast iron for reproducing works of art has lately been beautifully illustrated by a medallion head of Washington, enclosed in an oval frame, and embellished with branches of oak and palm, secured by a ribbon, forming an allegorical design, the whole being in iron. The mold was made by A. W. Jones, of this city, and the likeness is the result of much research, being a compromise between the portraits taken by Stuart and Trumbull, and representing him as, at once, the hero and the sage. These heads have been remarkably well cast under the superintendence of tbe artist, by Messrs. Russel & Beach; and as castings, they will favorably compare with any of those works of art in cast iron, of an equal size, that are sent from the foundries of Berlin. Mr. W. Hallison gave his assistance in their production, and they are now for sale by Mr. Hart, at the warerooms of Boardman, Gray & Co., No. 487 Broadway, this city. We understand that Mr. Hart intends visiting our principal cities, and that the head of Henry Clay is shortly to be produced. The size is 42×30 inches. We hope that this form of honoring our great men will be liberally patronized by the people, for it opens a new era in the history of American practical art.

The Sunken Ships at Sevastopol.

The Philadelphia *Ledger* asserts, on excellent authority, that the report that the Sevastopol company has proved a failure, and that the sunken ships cannot be raised, is an error. Whatever the difficulties in removing these obstructions in the entrance of the most important port in the Crimea—and the difficulties have been greatly exaggerated—the Russian government is determined that they shall be overcome; and as it is prepared to remunerate the contractors adequately, no matter what may be the cost, success is only a question of time.

A Whisper in the Ear.—It is no more than fair that correspondents who write to us for information, and expect us to reply by mail, should enclose a stamp to pay return postage. We do not practice scolding when this point is not observed, nor as a consequence do we refuse to answer such letters; but we would remind all who come within the pale of this notice that our yearly postage tax is more than many parishes pay to their preachers.

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Scientific American.

NEW YORK, MAY 22, 1858.

New Machinery for Paying Out the Atlantic Telegraph Cable—Who is the Inventor?

The principal feature in which the machinery to be employed in the next attempt to lay the Atlantic telegraph cable differs from that employed in the unsuccessful attempt of last summer, consists in certain contrivances by which the velocity of the paying-out of the cable is controlled, to a great extent, by the degree of tension on the cable itself, thus preventing the possibility of any such excessive strain upon it as would be liable to produce a rupture. This is obviously a great improvement upon the old apparatus, which was entirely at the mercy of the brakesman, to whose carelessness or stupidity the failure of the last expedition has been generally attributed.

The English newspapers recently received here contain programmes of the next expedition, with descriptions—though not of the most intelligible character—of the apparatus, an important part of which is that to compensate immediately for any sudden increase of strain caused by the pitching of the ship, or by suddenly arriving at an increased depth of ocean. We give a description of this from the London *Daily News* of April 24:—

"The cable, after passing four times round each of the wheels of the paying-out apparatus, passes under a grooved wheel or pulley, the axis of which is attached to a weighted rod working in a piston. This grooved wheel is so arranged that it can rise or fall in a framework, according as the tension of the cable which runs under its circumference, and over another fixed pulley, by which it passes out of the ship, is greater or less than the weight of the pulley and its weighted rod."

We are not told to whom the credit of the invention of this portion of the machinery belongs, but great credit is given to Mr. Bright, the engineer of the Telegraph Company, and to Mr. Everett, the chief engineer of the U. S. steam frigate *Niagara*, for having overcome the numerous mechanical difficulties. The invention, however, in our judgment, really belongs to H. Berdan, of this city, by whom a patent has been secured in England, specifying it, together with other contrivances in connection with it, by which the operation of paying out is entirely controlled by the degree of tension on the cable, instead of only partially, as is the case in the machinery now being put on board the *Niagara* and *Agamemnon*. The arrangement of the grooved pulley in the apparatus above described, it may be stated, differs from that proposed by Mr. Berdan in its working vertically instead of horizontally, but no change of action is involved in such change, which simply consists in placing the framework upright instead of laying it down upon the deck.

Drawings and specifications, together with a working model of his apparatus which had been exhibited by Mr. Berdan in this city, were taken to England by Mr. Everett and Mr. C. W. Field when they last left New York, and as the original drawings of the apparatus were made in our office, and the model was carefully examined by us, we are enabled to state without hesitation that those drawings, specifications and model represented the only important feature of the apparatus mentioned in the above extract.

We sincerely regret that any disposition should appear to be manifested on the part of those having control of this great enterprise in which two great nations are so nobly engaged, to appropriate for the accomplishment of their object what seems justly to belong to another; and, indeed, we wonder that pains should not have been taken to acknowledge with gratitude every effort or suggestion of any value to aid them from whatever source; and we hope that the Company will be able to give some satisfactory explanation for employing, without credit to him, this portion of Mr. Berdan's patented apparatus.

The Horse Taming Secret Again.—Another Theory.

We have already given our readers two theories for subduing wild and vicious horses. One system was founded upon Faucher's published experience in horse training, and assumes that the horse's kindness and affection could be conciliated to such a degree, through the gratification of the sense of taste and smell, as to make him more susceptible to the trainer's teachings; while the other advocated the opposite system of force, and asserted that you must in a positive manner show the animal you are his superior and master. It advocated the tying the animal's fore leg in an unnatural position, exhausting his strength and patience by torture, and virtually throwing him to the earth—a slight variation of a brutal course of treatment that has been tried from time immemorial without any beneficial effect.

We now have another theory on the subject; and as its trial cannot, under any circumstances, do injury to the noble animal it is intended to render submissive, we would advise those of our readers who feel an interest in horse taming to put it to the test, being careful to observe our former advice in practicing a gentle and kind course of treatment in connection with it.

This new system of taming is founded on the well-known process employed in subduing buffalo calves and wild horses taken by the lasso, and consists in simply gradually advancing toward the horse to be subdued, until you are able to place your hand on the animal's nose and over his eyes, and then to breathe strongly and gently, as judgment may dictate, into the nostrils. We have the authority of Catlin, in his "Letters and Notes on the American Indians," that this process is the one practised by the Indians in taming the wild horses of the prairies, and that it is invariably attended with success. It is mentioned by him that it is breathing, not blowing, into the nostrils that is to be performed, and that it ought to be continued some time to ensure success.

Speaking of the astonishing power thus exercised over wild animals, Catlin says:—

"I have often, in concurrence with a known custom of the country, held my hands over the eyes of a buffalo calf, and breathed a few strong breaths into his nostrils, after which I have, with my traveling companions, rode several miles into our encampment, with the little prisoner busily following the heels of my horse the whole way, as closely and affectionately as its instinct would attach it to its dam. This is one of the most extraordinary things I have witnessed since I came into this wild country; and although I had often heard of it, and felt unable exactly to believe it, I am now willing to bear testimony to the fact, from the numerous instances which I have witnessed, since I came into the country."

Mr. Catlin further states that the wild horse of the prairie is made docile and tractable by the same simple, kind, and singular treatment.

While upon this subject we may observe that the last accounts from Europe represent Mr. Rarey as realizing a splendid fortune there by imparting the secret of his peculiar art. He has publicly stated that the system of force exhibited at Astley's Circus, and alleged to be substantially the same as his own, and referred to in our last issue, is directly opposite the process he practises; and he authorizes the Messrs. Tattersalls to pay to any person other than his own pupils, who will subdue wild and vicious horses as successfully as by his method, the sum of one thousand guineas. Mr. Rarey does not mind acknowledging in public that the key to the art of horse-taming is a process of alchemy, however close he may keep the other portion of his secret.

New Side Screw Propeller.

A new steamboat, named the *Charlotte Vanderbilt*, has been built in this city, for the purpose of carrying out Captain Whittaker's method of propulsion, illustrated on page 188, Vol. XI., SCIENTIFIC AMERICAN. But although it should have been running on the North river long before this, it has not made its trial trip yet, and the inventor objects to her being allowed to run, on account of some new untried valve gear having been put on against his wishes. It is a handsome steamboat, and has a number of peculiarities. Its length is 210 feet, bow very sharp, with fine water lines; it has considerable breadth amidships to give stability in the water, as its draft is very light, being less than three feet at the bow. The interior of the hull, under the lower deck, is divided into sixteen wrought iron water-tight compartments or cells. It was built for great speed to run between New York and Albany as a day boat, to make as good time as the railroad; and it is, in fact, a locomotive steamer in regard to her engines. She has a screw propeller at each side, in place of paddle wheels, and each propeller shaft is driven direct by two locomotive oscillating cylinders. The screws are fourteen feet in diameter, and have twenty-five feet pitch. The cylinders are two feet bore and two feet stroke, and it was designed that their valves should be worked by eccentrics from the propeller shaft, with the old and well tried link motion. Instead of this, the valves are arranged to be operated by a bell crank arrangement attached to the piston rod, an untried method. We should really like to see this method of propulsion fairly tested in our waters, as it is said to be very successful on Lake Erie, and if so, its economy in room for machinery and first cost is very great. The engines and boilers only weigh forty-five tuns, and occupy a very small space. They are intended to do as much work as common steamboat engines and boilers of two and three hundred tuns weight.

It was calculated that the screws would make one hundred and twenty-five revolutions per minute, with the steam in the boilers at 100 lbs. pressure. At this rate, the *Charlotte Vanderbilt* would attain to a speed of about thirty miles per hour, allowing fifteen per cent for slip. Thus, $125 \times 25 \div 88 = 35.51 - 5.32 = 30.19$ miles per hour, a most extraordinary speed for a steamboat.

A Preventive to Potato Rot.

Since the dreadful blight to the potato crop of Ireland some years ago, when the entailed consequence of famine almost decimated the population of that unhappy land, agriculturists, agricultural chemists, and scientific gentlemen of all countries, have experimented upon this favorite and important esculent, with a view of ascertaining the causes, and preventing the ravages, of the potato rot. Numerous theories of its causes have been advanced, and any number of remedies proposed; but it would appear that, beyond the improvements in the selection of the seed, the cultivation of the vine, and the gathering and preserving the potato with increased care and skill, but slight benefit toward the great end sought has been derived from these sources. What the most distinguished agriculturists and *savans* of the world have failed to accomplish by the most intense thought and experiment, has, it appears, been effected, like the development of numerous facts in mechanics and science, by accident; or rather, such an effect was produced from this cause as set science to work in the solution of the problem, and to give it a practical tendency.

A few years ago, the English papers published a statement that some boys in Belgium, for amusement, inserted peas in seed potatoes which they were planting, and that in due time both peas and potatoes grew together, producing an unusual yield of peas. These were gathered, and the potatoes were allowed to ripen, and upon digging proved to be entirely sound, while the same sort, in other parts of the field, were badly rotten. This fact coming to the knowledge of Mr. J. Jackson, of Leeds, England, prompted him to submit a series of samples of diseased and sound potatoes to careful chemical analysis, and he invariably found that the diseased potatoes, as compared with the healthy ones, exhibited a marked deficiency of nitrogen and of nitrogenized matter in every instance, and also a great deficiency, as compared to the published analysis of the potato, by Liebig and others, made some years before. "From that result," says Mr. Jackson, in his published report, "I inferred that the potato being inherently deficient in nitrogen, if it were inoculated with a substance intrinsically rich in that element, as peas are, during the mutual decomposition and chemical changes of the substances of both plants, in the process of their germination and growth, a sufficient evolution of nitrogen from the pea would take place, and be absorbed by combining with and supplying the deficiency of that element in the potato, and thus communicate, as it were, its equivalent in that way, and counteract its tendency to disease."

Mr. Jackson then tried the experiment practically, by procuring several kinds of potatoes for sets whole, and inserting four or five peas (according to the size of the potato) deep into the fleshy part of the set, taking care to avoid the eye, and planting them in the usual way. The result was perfect success, with an extraordinary yield of both peas and potatoes, the latter being, almost invariably, large and healthy, and free from every trace of disease. These potatoes were laid on a wooden floor in a house, where they remained all winter, and in the following spring they were found to be all sound and healthy, and were employed as sets again in the same way, with the same result.

The Infected Ship.

In answer to a call we made upon our correspondents in No. 35 of the present volume, for some cheap and practical means which would disinfect the United States steam frigate *Susquehanna*, we have received many suggestions, and among the most original we select the following:—

First—It is proposed that the authorities procure five hundred bushels of oyster shell lime, fresh and warm from the kilns, and distribute it through the hold, and between her decks; then close her hatches, and allow the lime to become air-slacked, and the gas *emitted* to penetrate the ship. This, we fear, would not answer, as the only action that we could depend upon in the lime would be the absorption of all carbonic acid and moisture that may be in the atmosphere, as in slacked lime there is no gas emitted.

Second—It having been observed in Cornish mines that water was frozen at the bottom of the air pipe, it is suggested that similar means be used in freezing out "yellow Jack." The apparatus consists of an engine and compression air pumps at the mouth, and a long air pipe leading to an engine at the bottom. The air pumps in question were supplied with a small stream of water to prevent leakage, the heat resulting from the compression was so great as to convert a part into steam; but before the air reached the lower engine it was cooled still under pressure to the temperature of the atmosphere in the mine. When the air was released from pressure at the exhaust of the lower engine, the water was discharged as ice. By means of a few hundred feet of gas pipe and a weighted valve, air with water could be forced into the ship, and taking advantage of the observation described, "yellow Jack" would be frozen out. This, we think, is an admirable proposition, and worthy the attention of the authorities.

Third—A gentleman sends us the prospectus of Hellard's Concentrated Gaseous Chlorid, which, he asserts, is a most powerful disinfectant; but as he has not given us its composition, and as also he is in communication with the authorities, we can only notice the communication thus briefly.

There is still one more plan that we must notice one—one that comes from the assignee of Schooby's patent for producing currents of cold air. He proposes to cause air to pass through a mixture of ice and salt into the hold of the ship, the draft being created by the coldness, and a long chimney at the other end of the ship. It would require a fan blast or some other means of drawing this cold air through the ship, as it would never bring about sufficient ventilation by its mere lowness of temperature.

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Roofing Cements.

The following are other patents granted for roofing cements, alluded to by us in our last number:—

First.—This is the substance of a patent granted to Bradley L. Prime, of Hamilton, Ohio, March 23, 1858:

Coal tar, 1½ gallons.
Vegetable tar, ½ gallon.
Brimstone, 12 ounces.
Asphaltum, 6 oz.
India rubber, 24 oz.
Gutta percha, 1 oz.
Gum copal, 2 oz.
Red oxyd lead, 8 oz.
Red lead, 8 oz.
Umber, 8 oz.
Whiting (Spanish), 16 oz.
Hydraulic cement, 4 oz.
Japan varnish, ½ pint.

The india rubber is dissolved in camphene, and the gutta percha in linseed oil. The coal tar is heated to about 150° Fah., and the oxyd of lead, red lead, umber, whiting, hydraulic cement, rubber, and gutta percha stirred therein. The vegetable tar—previously melted with the sulphur, asphaltum, and gum copal—is then added, and the mass well stirred, until all the ingredients are incorporated. The composition is then allowed to cool, and is ready for use. It may be applied in successive coats with a brush, or by any other convenient mode. The roof of the house, to receive the cement, is first covered with canvas, strong paper, or felt. After the first coat of this cement is put on, its surface, while soft, is covered with sand, and it is then allowed to harden for about a week. Another coat is then put on and covered with sand, as before, and several successive coats may be applied in the same manner, but for common purposes, two will answer. This cement indurates, and becomes firm and durable.

The following are the functions ascribed to the ingredients in the specification:—

The coal and vegetable tars make a durable body with which to incorporate the other parts of the composition. Sulphur is a hardener and drier, is not affected by heat or cold, and it preserves the composition against atmospheric influences. Asphaltum is to harden the tar, and make it thicker and much stronger. The india rubber and gutta percha give elasticity to the composition; gum copal imparts toughness, and resists atmospheric influence; the oxyds of lead harden and dry the composition; and the umber dries, hardens, and prevents the cement "flowing." The Spanish whiting is a toughener and hardener; so is the hydraulic cement; and the Japan varnish is a drier, imparts a gloss, and prevents the cement running while being laid upon paper.

Claim: "I do not claim, broadly, the employment of such substances in roofing compositions.

"I claim the combination of the substances described, in substantially the proportions set forth, for the manufacture of a roofing composition."

Second.—The following is the substance of the patent granted to Robert Glennon, of New Orleans, La., on the same date as the one preceding:—

Ingredients: First, 3 gallons of turpentine, mixed with 5 pounds of Vandyke brown; stir well, and keep until the other mixtures are prepared. Second, 3 gallons of alcohol, and 5 pounds of gum shellac stirred until dissolved. Third, 5 gallons of boiled linseed oil, 1 pound of oil of amber, one gallon of Japan varnish, 6 pounds of sulphate of zinc, and 46 gallons of coal tar, all mixed together. These three compositions described are now thoroughly incorporated together, making the fluid or soft portion of the cement.

The drier is made as follows:—Half a bushel of fresh slacked lime, 4 quarts of plaster of Paris, 4 of red ochre, and 4 of Spanish whiting. These are mixed together, dried in an oven, and kept ready for use in a dry place, free from atmospheric influences.

Before applying the cement to a roof, one pint of the solid ingredients is added to each gallon of the soft or fluid composition, and the whole thoroughly incorporated. This cement is put on like paint, and each coat is allowed to dry before the next is applied. No sand is sprinkled on the surface of the first coat, but it is on the surface of the second and each succeeding one, as in the previous described patent.

The following shows the extent of the claim:—

"I claim the composition of the ingredients described, in substantially the proportions and in the manner set forth.

"I disclaim the compositions of R. H. Smith and C. R. Milks, patented 1857."

These were the patents published by us last week. There was no necessity for disclaiming them, that we can discern. None of the principal ingredients in any of them is new; the claims are all based on the distinct proportions of the ingredients, and these certainly differ from one another.

Any one of these cements, we think, will make a very good and cheap roofing for outhouses. Care must be exercised to have the surface of each thoroughly covered with sand, or some equally good non-conducting agent. The various functions ascribed to the ingredients of the first patent are highly amusing; but they afford a sufficient commentary upon themselves without criticism from us.

Sundials.

The sundial, the oldest method of ascertaining the solar time, is always an ornament, as well as useful in a garden or on a lawn, and we are often asked by correspondents how one can be made. It is simply a circular plate having a piece rising from it, as seen in the accompanying illustration, and the hours marked on the dial. A mirror should also be inserted, to reflect and show the direction of the clouds.

The sun, in passing from east to west, or rather, as we pass it in the opposite direction, casts a varying shadow of the triangular piece upon the dial, and as this change is regular, the shadow can be made to mark the hours. To make one is slightly troublesome to one not accustomed to the graduation of circles and surfaces, and therefore we are glad to inform those of our readers who want one for the coming summer, that we have discovered an excellent manufacturer—W. W. Wilson, of Pittsburg, Pa.—who for $15 furnishes one with a copper dial plated with silver, a mirror for the reflection of passing clouds, and on a cast iron Doric column painted like stone. The engraving is taken from one of these, and, as will be seen, it forms at once a classic and useful ornament.

Newspaper Statistics.

There are 104 papers published in New York city, having an aggregate annual circulation of 78,000,000, and 51 in Philadelphia, having a circulation of 40,000,000. In Albany the number of papers annually printed is 16,050,460, which gives a proportion of 321 to each individual, or more than one to each person every week day in the year. The people of the United States spend $15,000,000 in a year for newspapers. The origin of newspapers is traced to Italy. The first one in England appeared during the reign of Queen Elizabeth, at the time of the Spanish Armada, and was called "*Ye English Mercurie.*" The Boston *News-letter*, commenced in 1704, was the first in America. One hundred years ago there was not more than twenty-five newspapers in this country; but at this period, if all the newspapers annually printed here were put together in a continuous string they would reach more than ten times around the world, and their weight would amount to seventy million pounds.

Can there be a Great Scarcity of Timber in the United States?

ARTICLE 2.

Messrs. Editors—Bertholdi, the authority I have mentioned in my former communication, gives more glaring illustrations as to the high importance to every civilized nation of a systematic cultivation of trees. Holland, he remarks, is a country naturally poor in the growth of timber, therefore it has to be supplied with wood for building houses and ships by the neighboring countries, namely, Wurtemberg, Baden, and Bavaria, from whence an enormous quantity is annually imported at an almost fabulous cost. Were it not that Holland possesses rich fields of peat, it would be a poor country, notwithstanding its highly productive foreign colonies and its great commerce. This is the case with the peasantry on the shores of the Rhine, where a most fertile soil for the cultivation of vines and grain of every description exists, and yet comparative poverty is produced on account of the large amount of money required to be annually expended on wood.

France is next taken up, and it is said that its geographical position and its climate are extremely favorable for a rich production of timber, but the government of *la grande nation* keeps employed ignorant, arrogant and utterly corrupt foresters, and instead of a rich revenue from this large natural source, the government has a great surplus in the expenditures every year. Although stringent laws are in existence, and severe punishment is inflicted on every poor peasant who violates them, to prevent any illegal destruction, the yield in general throughout France is not one quarter of what it would be from a rational management. The contrast between Germany and France is most remarkable. It is shown by the relative states of two forests, the one on the boundary of Germany, and the other on the adjoining boundary of France, where there is no difference of climate and soil. One is in the Department de Bas Rhin, the other in Bavaria. The French forest is five times as large as that of Bavaria, and while the latter government draws a net revenue of 46,000 francs annually, the former has a surplus expenditure of 10,000 francs in the same period.

Such facts are sufficient, I believe, to convince the most sceptical on the doctrine of a systematic cultivation of trees.

L. R. Breisach.

Spiritual Alchemy.

Dr. S. A. Peters, writing to the *Spiritual Telegraph*, states that he saw in the laboratory of Professor Hare, in Philadelphia, some copper cents which had been changed into gold by the *spirits*, and then rechanged to copper. He also saw two pieces of platina ore placed into a box, together with two sealed glass tubes, quite empty, and in a short time the spirits had reduced the ore into pieces of metallic platinum which were in the glass tubes; and other experiments equally wonderful. These changes were all performed by the agency of a young man, a *medium*, through whom the spirits announced their magical power.

We must confess that we are surprised that in this age, men of intelligence and learning, as many spiritualists undoubtedly are, can be deceived by such tricks, which are only worthy the booth of a traveling conjurer; and we are disposed to believe that the box into which all these articles have to be placed for the change to be performed, is one of those mechanical devices which aid the magic of a Robert Houdin or Professor Anderson. At any rate, from our knowledge of what spirit life is, deduced from logical inference, we confidently assert that no disembodied spirit ever condescended from a higher sphere, or ascended from a lower one, to amuse the world with the tricks of an itinerant magician. If the spirits can, and are willing to change copper cents into gold, which is made to appear in the above statement, California gold mines are of no value. We have only to get copper from Lake Superior, and get the spirits to transform it into gold.

The whole statement bears the seal of trickery upon its very face.

Where Musquitos Come From.

These pests of summer proceed from the animalcules commonly termed the "wiggle tail." If a bowl of water is placed in the summer's sun for a few days, a number of "wiggle tails" will be visible, and they will continue in size till they reach three-sixteenths of an inch in length, remaining longer at the surface as they approach maturity, as if seeming to live on influences derived from the two elements of air and water; finally they will assume a chrysalis form, and by an increased specific gravity sink to the bottom of the bowl. A few hours only will elapse when a short black furze or hair will grow out on every side of each, till it assumes the form of a minute caterpillar. Its specific gravity being thus counteracted, it will readily float to the surface, and be wafted to the side of the bowl by the slightest breath of air. In a short time a fly will be hatched and escape, leaving its tiny house upon the surface of the water.

Any one who has had a cistern in the yard has doubtless observed the same effect, every summer, although he may be ignorant of the beautiful and simple process of development. If a pitcher of cistern or other water containing these animalcules is placed in a close room over night, from which all musquitos have been previously excluded, enough musquitos will breed from it during the night to give any satisfactory amount of trouble. In fact, standing by a shallow, half stagnant pool on a midsummer's day, the full development of any number of "wiggle tails" to the musquito state can be witnessed, and the origin of these disturbers of night's slumbers thus fully ascertained.

Artificial Propagation of Fish.

The London *Athenæum* says the experiment made by the Emperor of the French to stock the waters of St. Cloud with trout hatched artificially, has met with complete success. Trout twelve months old are eight inches long, and weigh from two and a-half to three and a-half ounces. Their value in the Paris market would be from twenty to twenty-five cents. The trout thirty-three months old are from nineteen to twenty inches long, and weigh from twenty-four to forty-one ounces, and would sell at from sixty cents to a dollar and twenty cents. It is further stated that the waters at St. Cloud were never before inhabited by any species of *salmynniæ*. The trout are extremely numerous, and promise to yield highly productive returns, in a commercial point of view. The principal object of the Emperor is to ascertain whether the production of fish by artificial means is more profitable than the cultivation of the land, taking the same superficial area in both cases.

Telling the Age of a Horse.

It is generally believed that the age of a horse can be determined by the number of wrinkles over his eye; but a correspondent writing from Monterey, Ala., informs us that this is not a reliable rule. He says, "There is a horse in this section of country which is thirty years old, and has no sign of a wrinkle over his eye; while there are others not over five years old that have wrinkles."

A Gentle Hint.—We often wonder why so many inventors who send models to us neglect to put their names and Post Office address upon them. We are often exceedingly bothered in this way, and if those negligent ones could only get a view of our anxious faces, and know the trouble and pains we are at to find out upon whom we can justly fix the paternity of these apparently fathomless cases, we are sure that in all coming time no gentle hint of this kind will be needed.

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Correspondents

W. B. B., of N. Y.—There is no limit in the time allowed for the re-issue of a patent, or for a patent to be granted for an invention after its conception, provided in the latter case it is not allowed to come into general public use for a period exceeding two years before application for a patent is made. Your design for laying telegraph cables is not new.

I. H. N., of Vt.—Morse's patent for the electro-magnetic telegraph was extended in 1854 by the Commissioner of Patents for seven years; it will not, therefore, expire till 1861. Another renewal, if procured at all, must be obtained by especial act of Congress.

P. M., of Pa.—To stock the river you mention with eels, you must obtain a number of the species from the nearest river or creek where they are found. They can be caught in an eel trap, which is very simple. It consists of a barrel with a large hole in the lid, in which is hung a tube of coarse cloth. This trap is sunk to the bottom of the river in the evening, and raised in the morning. The eels can easily get into the cloth tube in the barrel but not out of it.

F. E., of N. Y.—Compressed air has been employed in an engine, but without obtaining those advantages which you expect.

G. J. N., of N. J.—The Patent Office Report for 1857 has not yet been issued.

B. Mackerly, of Bainbridge, Ohio, wishes to correspond with manufacturers of hemp linen fabrics—such as would be suitable to be employed in expressing grapes.

H. K., of La.—We have never known of tinned iron tubes being employed for boilers to prevent incrustations. The advantages to be derived from them would not, in our opinion, cover the extra expense. But if you can demonstrate by experiment their superiority, we think you may obtain a patent.

O. L. C., of Ill.—Your reply of the 8th fully indicates a clear knowledge of what we require of you. You must proceed *de novo*. Send model and patent fee as soon as possible, and we will vigorously push your case.

H. E., of Conn.—Before applying for a patent on your invention, we advise you to have a preliminary examination made at the Patent Office. This will cost you the small fee of $5; and it is our experience, after a trial of eighteen months, that, in a great majority of cases, this course is the safest and best.

P. K. W., of Ohio.—We appreciate your suggestion in regard to the republication of back volumes of the SCI. AM., but it is impracticable at this late period. Few of the original engravings are in our possession now.

W. H. B., of N. Y.—You can print with copperplate or any other engravings by the use of water pressure, the water being employed as the pressing cushion. There can be no difficulty about the operation, but we do not see what benefits can be derived from it over the common method.

J. H. H., of Md.—You can enamel both sides of cloth in the same manner that one side is treated, In No. 36, this volume, SCI. AM., there is a recipe for cloth enamel varnish.

M. J. O., of Mass.—The Smith patent lock to which you allude we never heard of before, and from your brief description of it can give you no opinion as to its merits. If you will send us one for inspection, we will try to answer your questions.

I. B. R., of Iowa.—You can hear of such a machine as you want for cutting out match splints by addressing Wm. Gates, Jr., Frankfort, N. Y.

C. A. W., of Iowa.—We are aware that bullock's blood, mixed with sand and lime, is employed for making hard barn floors in Wales and some other European countries.

D. P. F., of Pa.—You can procure an efficient apparatus for burning green tan of Gideon Bantz of Fredrick City, Md. For particulars write to him.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, May 15, 1858:—

D. J. W., of Ohio, $25; B. & R., of Ill., $30; B. & McC., of Mo., $55; J. L., of Mass., $15; R. & C., of N. Y., $25; J. H. P., of N. J., $30; W. H. Van G., of N. J., $30; D. B. T., of Ohio, $30; F. H. O., of Pa., $25; W. S. H., of N. J., $25; E. M., of N. Y., $25; J. B., of Conn., $20; S. P., of Mass., $30; J. H. C., of Ohio, $10; W. M., of Iowa, $30; A. E. T., of Ohio, $25; J. P., of Mass., $25; M. W., of Ohio, $5; J. H. G., of Ky., $25; F. C. K., of N. Y., $30; J. F., of Mass., $90; A. A. H., of Ohio, $25; J. H. H., of S. C., $30; J. A. E., of Conn., $30; J. M. S., of Cal., $77; T. W. L., of N. Y., $30; A. F., of Ohio, $35; A. D., of Mich., $30; J. L. S., of Tenn., $35; T. W., Jr., of Conn., $25; S. L. W., of Pa., $25; A. B., of Pa., $10; J. W. P., of Pa., $25; A. D. S., of Vt., $20; J. P., of L. I., $30; G. W. S., of Conn., $55; A. D. B., of N. Y., $55; W. H., of N. Y., $30; J. B., of N. Y., $35; H. O. A., of La., $25; S. F. I., of Ind., $30; J. H. B., of Mass., $10; G. E., of Pa., $30, W. B. C., of Pa., $12: B. B. & Co., of R. I., $37; J. M., of Miss., $27; A. A., of Ill., $25; J. I., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 15, 1858:—

D. J. W., of Ohio; R. & C., of N. Y.; W. W. L., of Ohio; J. L., of Mass.; W. S. H., of N. J.; E. M., of N. Y.; F. H. O., of Pa.; W. H. Van G., of N. Y.; A. H., of Conn.; J. H. G., of Ky.; I. F. B., of Ga.; J. B., of Conn.; J. P., of Mass.; M. W., of Ohio; A. A. H., of Ohio; J. H. H., of S. C.; W. A. J., of La.; G. W. S., of Conn.; A. D. B., of N. Y.; W. H., of N. Y.; W. W. W., of La.; J. W. P., of Pa.; J. P., of Tenn.; J. B., of N. Y.; R. H. N. B., of R. I.; L. L. C., of of N. Y.; H. O. A., of La.; W. B. C., of Pa.; C. C. W., of N. J.; A. A., of Ill.

Literary Notices.

THE LIFE AND TIMES OF HUGH MILLER. By Thomas N. Brown. Rudd & Carleton, 310 Broadway, New York. The life of a man of science, a *litterateur*, and a theologian, cannot fail always to call forth the deepest sympathies of our nature, for in their lives there must always be that touch of nature "that makes the whole world kin." So in tracing through its varied scenes, incidents and occupations, there is so much of interest to all mankind, that any biography of Hugh Miller will always prove an interesting relation by whomsover it is told. The one, and the first that has yet appeared, that is now before us, seems to us very defective, because it only gives a Scottish view of Hugh Miller's character, life and genius, and in it he is regarded rather as the powerful mouthpiece of a belligerent church party than as the enunciator of the majestic truths of science. As the former, he is known in his native Scotia, and as such his name will long be mentioned in hallowed tones by the denizens of her picturesque hills and lovely vallies: but to us, to the world, his name is known as that of a true philosopher, the poet of geology, whose writings on his favorite study are one grand epic, and his truthful imagery equal the loftiest poem. With a pen unequaled since popular science has been written, he sketched the life of a bygone world, and brought up to the mind's eye as vivid as a present scene the luxuriant vegetation of the carboniferous strata; and so we conceive that a man of his gigantic mental caliber is worthy of a biography more correct in its appreciation of his scientific character. Perhaps it may be necessary that more time should elapse before his life can be fairly written, and until that time comes we accept the present one with gratitude, rather than have none.

THE YOUNG MENS' MAGAZINE—The number for May contains articles on "Elisha Kent Kane," and "The Early Italian Reviewers," which are very good. We think that were the editor to weed his original poetry, the value of the magazine would be enhanced.

WESTMINSTER REVIEW—Published by Leonard Scott & Co., No. 54 Gold street. The number of the above Review for this quarter contains eight original essays. The leader is a favorable criticism of Auguste Comte's catechism of positive religion. It is not profound, its author seems to consider religion as a mere scale of sentiments, not a body of active principles leading and guiding men to action. There can be no question, however, of the general ability of this periodical.

THE ORIENTAL HORSE CHARMER—By C. J. Eldridge, Cincinnati. This pamphlet professes to teach the method of taming horses, but we can find nothing in it but what has been previously published in works upon the treatment of this noble animal.

THE PRINTER—Published by Henry & Huntingdon, 1 Spruce street, New York. This is a new periodical devoted to the "art preservative of all arts," and it is exceedingly well got up and the matter admirably selected.

[Advertisement.]

THE NEW AMERICAN CYCLOPÆDIA.—Reasons for Buying it, and the Ways and Means of Buying it.—The New American Cyclopædia is popular without being superficial, learned but not pedantic, comprehensive but sufficiently detailed, free from personal pique and party prejudice, fresh and yet accurate. It is a complete statement of all that is known upon every important topic within the scope of human intelligence.—Every article in it has been specially written for its pages by men who are world-renowned upon the topics of which they speak. They are required to bring the subject up to the present moment—to state just how it stands *now*. All the statistical information is from the *latest* reports; the geographical accounts keep pace with the latest explorations; historical matters include the freshest just views; the biographical notices not only speak of the dead, but also of the living, and of the living up to within the last half year.

And the work is *cheap*. Three dollars a volume: and each volume contains more—we have carefully computed the contents of both—more than the whole six volumes of Bancroft's history, which are sold at two dollars a volume, making in all twelve dollars. Every family ought to possess a copy of the New Cyclopædia. It is a library in itself. Let each man save twenty-five cents a week, and by the time the work is complete he can not only own the fifteen volumes, but also a handsome bookcase to keep them in. Save five cents a day, (a little self-denial will do it,) and you save enough to buy a set of books which will give you sound information upon all points about which you wish to inquire. School children—certainly the members of our high schools—can all have it. Save the pennies which are given to you, run errands and "do chores" when you can, and thus earn a quarter of a dollar a week—and the task is done. Mechanics! you have not much time to read; this then is just the work for you; it will help you upon all points of inquiry—and three hours *overwork* per week will buy it. Lawyers, physicians, clergymen! it will give breadth and accuracy to your information, and add largely to your influence and income. The NEW CYCLOPÆDIA will be completed in 15 volumes royal 8vo.; $3 per volume, in cloth; $3 50 in library leather, $4 half morocco; $4 50 half Russia extra.

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IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.

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Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to
MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours very truly, CHAS. MASON.

TO CONTRACTORS—OFFICE OF CHIPPEWA Falls Lumbering Company, Chippewa Falls, Wis., April 24, 1858. Proposals will be received at this office until the first day of June next for building a Spar Dam across the falls of the Chippewa river, in town 28, North; range 8, West; said dam to be 700 to 800 feet long, and 16 feet high, and to be built in the most substantial and workmanlike manner, under the supervision of the President of the company; to be fitted with a slide about 20 feet wide, and long enough to allow lumber rafts to pass over in safety. The quantity of round timber to be used will be about 90,000 feet, running measure, and will average 12a16 inches in diameter. All the necessary timber and plank will be furnished the contractor at the head of the Falls. The contract will be awarded on the 15th of June, and will be executed immediately afterwards. The work must commence on the 1st of July, or at as early a day previously as the water will permit, and must be completed by September 15th, subject to detention from high water. For the faithful performance of the contract, satisfactory security to the amount of $10,000 will be required on the execution of the same. Plans and specifications, and all necessary information will be furnished on application to J. F. JORDAN, 87 Randolph st., Chicago, Ill., or to JOHN JUDGE, Secretary, Chippewa Falls, Wis.

GLOVER'S PATENT BALANCE IRON FOR Millstones, superior to anything of the kind now in use, giving the most complete balance, without difficulty, and in the shortest time. County, State, or individual rights for sale. Address J. H. GLOVER, Temple Hill, Barren co., Ky.

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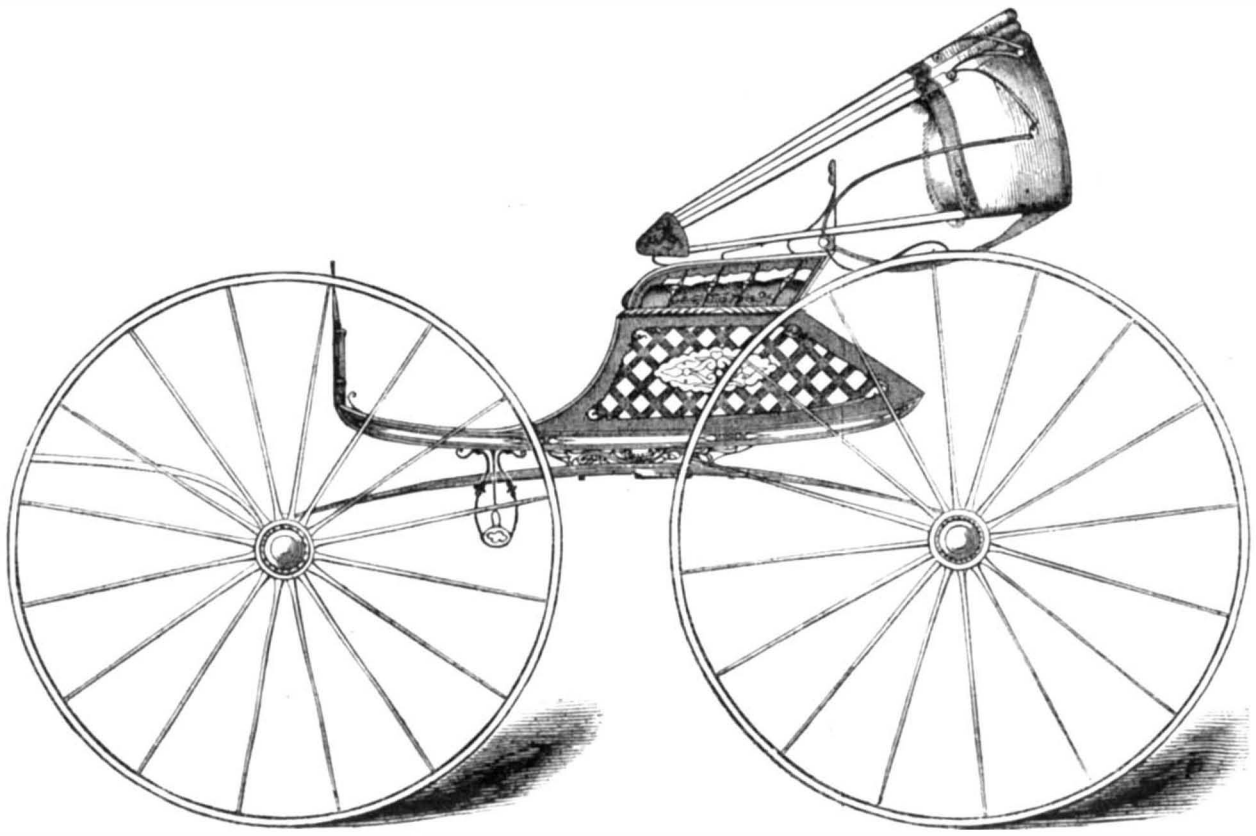
Science and Art.

Coral Reefs.

At a recent meeting of the Boston Natural History Society, as reported in the *Traveler*, Professor Agassiz, gave an account of his recent visit to the reefs of Florida, and explanations of coraline growths. He estimates the rate of coral growth to be only a few inches in a century, a tenth or a twelfth part less than has been hitherto supposed; and, supposing the reef rises from a depth of twelve fathoms, he would calculate its age upon its arrival at the surface of the water to be about twenty-five thousand years, and the total age of the four distinct concentric reefs of the southern extremity of the peninsula to be one hundred thousand years. Professor William B. Rogers said that the physical conditions could not have differed much in that region a hundred thousand years ago from what they now are, and consequently that such a calculation could reasonably be made upon the data accumulated by Professor Agassiz. Dr. D. F. Weinland annihilated such speculations by stating that, while in Hayti, he had noticed branches of some kinds of corals from three to five inches above the water, which must have grown that much during the short winter of three months, when the water was high. His observations went to prove that some kinds of corals were more rapid in their growth than is generally believed to be the case.

SALADEE'S IMPROVED HALF-ELLIPTIC SIDE-SPRING WAGON.



The accompanying engravings represent a very important improvement in light pleasure vehicles, patented by C. W. Saladee, of Columbus, Ohio, Dec. 1, 1857. To devise some plan by which to construct the ordinary buggy with more simplicity, render it lighter, and at the same time impart to its springs a greater degree of elasticity, has been a study to which the inventor of this carriage has devoted much time and attention within the past two years. The cost of material for an ordinary light buggy, and the amount of work lavished upon an ordinary "running part" in its perch stays, bed wood on the hind axle, spring bars, and body loops, is not less than from $20 to $30. If the use of this work can be avoided, without any detriment to the appearance and durability of the vehicle, it is certainly a desirable point to be attained. Again, the connection between the shafts and the front axle has, for a number of years, been a great annoyance on account of its becoming loose and rattling, and to overcome this difficulty, a number of improvements have been proposed and patented. But in this case the inventor has preferred discarding the use of a joint in that connection altogether, and thereby rendering the shafts less liable to rattle or get out of repair than could be expected from any other mode of attaching them.

Our engravings represent the improved buggy, Fig. 1 being a side elevation, and Fig. 2 represents a top view of the carriage part, with the body detached, from which the reader will understand how it is arranged and constructed. The springs, B B, are attached to the hind axle, A, by means of a clip passing up from the under side and through the end of of the spring which rests on top of the axle; this axle requires no bed wood upon it. The front ends of the springs are made with an eye five-eighths in diameter, into which the ends of the crossbar, D, passes, and is there secured by means of the nuts, H H, but in such manner as to allow this bar, D, to rotate in the said eyes of the springs by the up and down movement of the shafts. The bar is made very light, being iron. It will be observed that by introducing the joint described, at H H, the shafts may be attached without a joint at K, as is usual, and still retain the same freedom in this up and down motion. It is only transferring the joints usually made between the shafts and axle at K to H H, where, from the constant pressure of the springs, they can never rattle.

Fig. 3

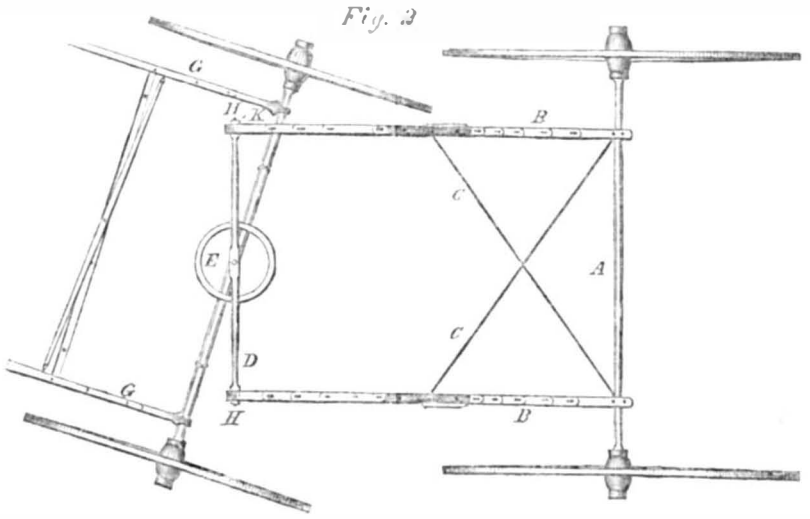


Fig. 3

Fig. 4

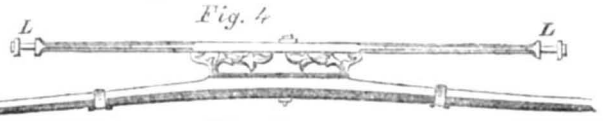
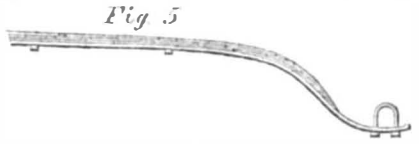


Fig. 5



The cross-braces, C C, are applied in the manner shown, and for the purpose of retaining the hind axle in its position when either of the hind wheels strike an obstacle in the road. Those braces are also indispensible for another very important purpose, which is this: when but one person is riding in the buggy, it matters not how much weight may be thrown on either side, the hind axle cannot be thrown into an angling position.

Figs. 3, 4 and 5 will convey a more correct idea of the construction of the parts than can be had from Fig. 2. Fig. 3 is a side view of the spring, showing the eye of the front extremity R, and at the back, S, a view of the axle clip. Fig. 4 is a front view of the bar, D, (in Fig. 2,) showing the shape of the ends with nuts applied, L L, where they play in the eye of the springs B, and also a view of the front axle supporting the iron bar. Fig. 5 is a sectional view of the front axle showing how the shafts are screwed thereto.

It will be noticed that in the whole of this gearing there is but one piece of wood, and that is the bed on the front axle, and even that can be dispensed with, if desirable, and thus make it without a particle of wood about it, except the shafts.

For further information address the inventor as above.

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